Huntleigh
HEALTHCARE

Nimbus II, Nimbus 3, DFS2 and DFS3

Service Manual

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CHAPTER 1

INTRODUCTION

1 About This Manual

Huntleigh Healthcare strongly recommend that their equipment is only serviced by trained personnel and provide courses for customers who wish to become licensed to service their own equipment. In no event will Huntleigh Healthcare be responsible for any service performed by customers or third parties.

This manual contains information on maintenance, servicing, repair, troubleshooting and testing for the **Nimbus® 2**, **Nimbus 3**, **DFS 2** and **DFS 3** systems which comprise a pump and a mattress. Read and understand this manual before attempting to service or repair the equipment.

Warnings, Cautions and Notes

WARNINGS given in this manual identify possible hazards in procedures or conditions which, if not correctly followed, could result in death, injury or other serious adverse reactions.

Cautions given in this manual identify possible hazards in procedures or conditions which, if not correctly followed, could result in equipment failure or damage.

Notes given in this manual are used to explain or amplify a procedure or condition.

WARNINGS:

BEFORE PERFORMING ANY SERVICE OR MAINTENANCE PROCEDURES, ENSURE THAT THE EQUIPMENT HAS BEEN ADEQUATELY DECONTAMINATED.

VOLTAGES IN EXCESS OF 30 VOLTS RMS OR 50 VOLTS DC CAN, IN CERTAIN CIRCUMSTANCES, BE LETHAL. WHEN WORKING ON EQUIPMENT REQUIRING EXPOSURE TO LIVE, UNPROTECTED CONDUCTORS WHERE SUCH VOLTAGES ARE PRESENT, EXTREME CARE MUST BE EXERCISED.

2 Technical Description

The **Nimbus 2**, **Nimbus 3**, **DFS 2** and **DFS 3** are Dynamic Flotation Systems for use in aiding the prevention, treatment and management of pressure sores.

It is a powered, air-filled mattress replacement system with microprocessor-aided control and alarm functions which have LED indication on the front panel of the pump.

Operating Principle

The patient is supported by twenty cells which are enclosed by a polyurethane coated fabric cover. This cover has waterproof, vapour permeable, and two-way stretch properties.

The system incorporates a sensor that automatically adjusts the support pressure within the system to accommodate different weight patients and their weight density or distribution. This sensor pad, known as the **Auto-Matt®** sensor, optimises the pressure to which the cells are inflated to be the minimum to support that patient in a given position.

Small adjustments can be made to the mattress pressure, using the comfort control knob on the pump. This is a patient comfort feature to make small adjustments to the softness or firmness of the mattress.

The **Nimbus 3** and **DFS 3** mattress also includes the **HeelGuard®** special powered-down feature which is designed to maximise pressure relief under the heels.

Dynamic Mode

In dynamic mode the support surface beneath the patient is cycled every 10 minutes providing periods of pressure relief for the whole body.

Figures 1 and 2 show how the system operates in dynamic and static modes. Fig 2 shows the pneumatic circuit in principle. A dual compressor system is used to provide a source of air supply. This is fed to a high pressure switch, the Auto-Matt sensor and a rotary valve. The high pressure switch is used to detect system over-pressures through blockages. The low pressure switch, which is located in the pressure control assembly, is used to detect if the air pressure in the system falls below minimum. The rotary valve channels the air supply as shown below:

- C to outlet A with B at atmosphere (D) - A & C Cells Inflated
- C to outlet A and B - All Cells Inflated (A, B & C)
- C to outlet B with A at atmosphere (D) - B & C Cells Inflated
- C to outlet A and B - All Cells Inflated (A, B & C)

This then allows cells A and B in the mattress to be inflated and deflated in a cycle period of ten minutes.

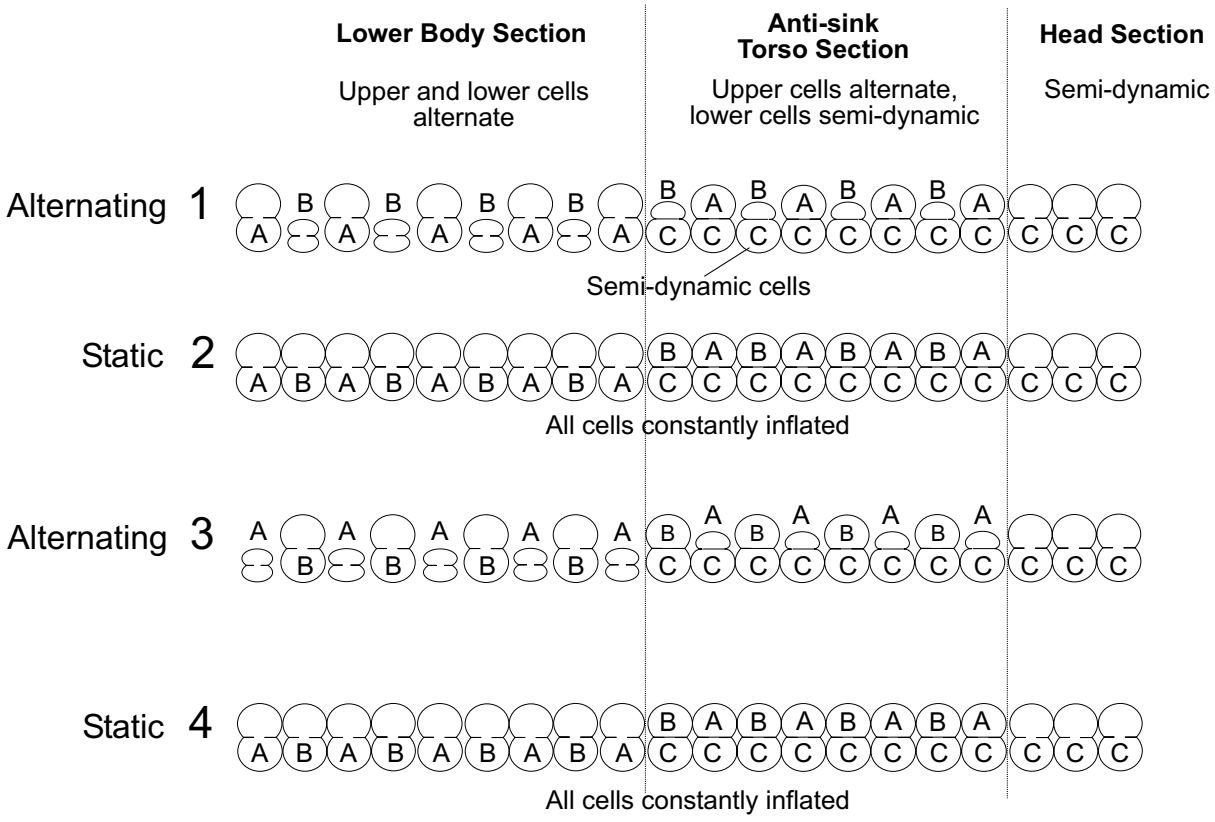


Figure 1 - Mattress Cell Inflation Cycle

In the mattress there is a third section of cells labelled as C. These are fed through partial non-return valves from cells A and B and are therefore never at zero pressure. These are positioned as shown in Fig 1 to prevent the torso section from 'bottoming' during dynamic mode and when a patient is sitting upright. Semi-dynamic pressure is also applied to the head cells (C) and the heel protector (above CPR unit) for added patient comfort.

On **Nimbus 3** and **DFS 3**, loop sheets, the heel cells have a special powered-down feature to facilitate fast deflation and thereby improve pressure relief under the heels.

Static Mode

In static mode the support surface is kept constant and provides pressure reduction without cycling. The rotary valve is held in a constant position so that cells A, B, C and the heel protector are equally inflated.

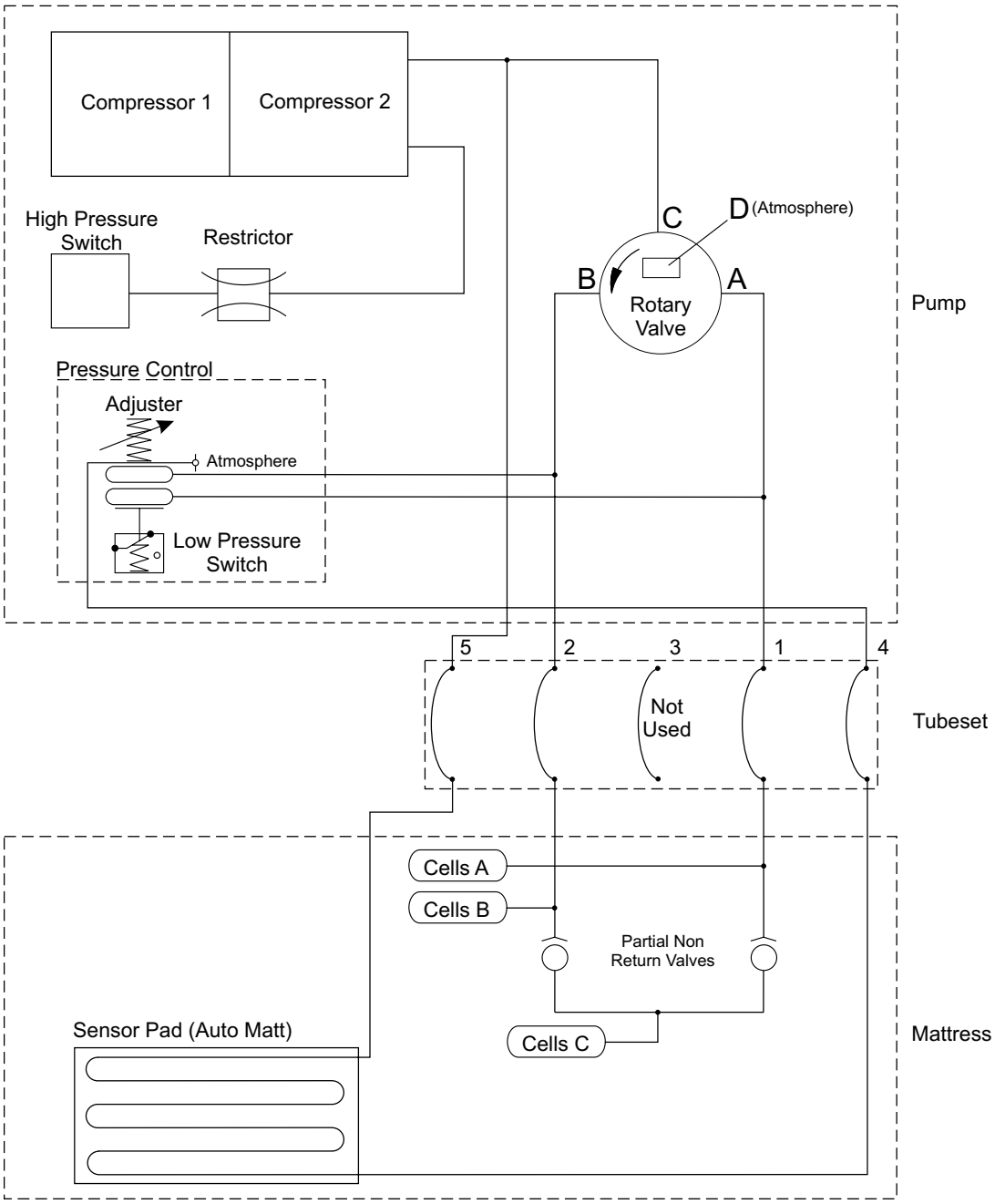


Figure 2 - Pneumatic System Diagram

Auto-Matt

The Auto-Matt sensor consists of a flexible air sensor pad which is located underneath the mattress cells. This acts as a pressure regulator and accommodates changes in patient weight and position in the following manner:

It is pneumatically connected in parallel to the mattress cells and when it is not occluded it channels the air supply away from the cells. Occlusion of the Auto-Matt sensor is by patient weight and position. In this manner it allows internal mattress air pressures to be compensated to that required to support the patient.

With no patient on the mattress the Auto-Matt sensor is not occluded and pressure in the mattress is governed by the pressure control shown in Fig 2. This is in turn set to a pressure range which can be slightly adjusted to change mattress pressures for patient comfort.

With a patient on the mattress, pressure is exerted onto the cells and this can partially or totally occlude the Auto-Matt sensor. This results in more air being supplied to the cells increasing their internal pressure until full patient support is achieved. Should the patient change to a position which necessitates a lower pressure, air is released via the Auto-Matt sensor through the pressure control valve until the correct lower pressure is achieved in the cells.

System Start Up Sequence

After the pump is switched on the start up sequence is as follows:

- All display indicators illuminate for a few seconds.
- Low Pressure and Wait indicators remain illuminated while the mattress inflates (approx 20 Min). All the other indicators go out.
- The pump runs one compressor until the rotor turns to the cross over position (within 5 Min).
- The rotor then depresses the microswitch which stops the rotor and activates the second compressor.
- Both compressors run for 20 minutes or when the mattress reaches the minimum pressure setting.
- When the minimum pressure setting is reached the Low Pressure and Wait indicators go out.
- The pump cuts down to one compressor and the rotor starts to rotate.
- In Dynamic Mode the compressors will alternate every 4 hours.
- In Static Mode the Coils (4 off) will alternate every 4 hours (one at a time). The compressors alternate depending on which coil is working (there are two coils in each compressor).

Alternating Head Cells Modification

The **Nimbus** and **DFS** beds are normally supplied with the top three (head) cells configured so that they are inflated to a specific pressure. Although the pressure in the head cells normally remains constant, the pressure in the rest of the cells slowly alternates.

The Alternating Head Cells Modification converts the static head cells into alternating cells. The modification can be applied in two configurations that follow:

Configuration 1 converts all three head cells from static pressure to alternating pressure.

Configuration 2 converts the second and third cells from static pressure to alternating pressure. The top head cell remains as a static pressure cell.

CHAPTER 2

MAINTENANCE

1 Pump Maintenance Checks

If any parts are found to be damaged they must be replaced in accordance with Chapter 3, Pump Repair.

1.1 Visually inspect the following for damage, wear and potential faults:

1.1.1	Outer Casing	Check for damage and security.
1.1.2	Switches, Control Knobs	Check function.
1.1.3	Hanging Bracket	Check for damage and security.
1.1.4	Outlet ports	Check for damage and free from obstructions.
1.1.5	Rubber feet (8 0ff)	Check for security.
1.1.6	Fuses	Check condition.
1.1.7	Front panel	Check for damage to LED's and buttons.
1.1.8	Mains/Power lead	Check for damage and security of plug.
1.1.9	Labels	Check all labels are present and legible.

1.2 Disassemble the Rear Case (Refer to Page 5, Section 4) and visually inspect the following for damage, wear, security and potential faults:

1.2.1 Compressor

1.2.2 Rotary Valve Assembly

1.2.3 Printed Circuit Boards (PCB's)

1.2.4 Pressure Control Assembly

1.2.5 High Pressure Switch

1.2.6 Silencer Bag

1.2.7 Bio Filter (Nimbus 3 and DFS 3 Only)

1.2.8 Tubing and Wiring

1.2.9 Screws, Nuts and bolts

1.3 Remove the compressor lids and visually inspect the following for damage, wear and potential faults:

1.3.1 Coils

1.3.2 Elbows and connectors

1.3.3 Filters and gaskets

1.3.4 Shuttle Valve Assemblies

2 Pump Soak Times

2.1 A pump must be soaked with its ports occluded for the following reasons:

- To ensure that the pump is at normal running temperature prior to pneumatic performance tests being carried out.
- To stress test major/critical parts which have been replaced or repaired.

2.2 All pumps should be soaked for a period of 30 to 60 minutes prior to any pneumatic performance test being carried out.

2.3 If any of the following major/critical components have been replaced or repaired, then it is recommended that the pump be soaked for 12 hours prior to being tested:

- Valve Shuttle Assemblies
- Silencer Bags
- Printed Circuit Boards (PCB's)
- Compressor
- Rotary Valve Assembly

3 Pump Service

A pump should be serviced every 12 months or when the symbol is illuminated. To carry out a service on the pump, do the following:

3.1 Carry out the Pump Maintenance Checks (Refer to Page 1, Section 1).

3.2 Replace the following components:

3.2.1 Case Seal (Refer to Chapter 3, Page 5, Section 4 and 5).

3.2.2 Valve Shuttle Assemblies (Refer to Chapter 3, Page 15, Section 15).

3.2.3 Compressor AV Mounts (Refer to Chapter 3, Page 10, Section 10 and 11).

3.2.4 Compressor Filters (Refer to Chapter 3, Page 13, Section 12).

3.2.5 Case Filter (Refer to Chapter 3, Page 7, Section 6).

3.2.6 Pump Manifold Gasket (Refer to Chapter 3, Page 17, Section 17).

3.3 Reassemble the pump and soak for the recommended time (Refer to Section 2).

3.4 Carry out a flow, pressure and function test on the pump in accordance with Chapter 6, Page 1, Section 1.

3.5 Carry out electrical tests on the pump in accordance with Chapter 6, Page 13, Section 8.

4 Mattress Maintenance Checks

If any parts are found to be damaged they must be replaced in accordance with Chapter 4, Mattress Repair.

4.1 Visually inspect the following for damage, wear and potential faults:

4.1.1	Base and Top Cover	Check for tears, staining, clarity of printed labels.
4.1.2	Base/Top Cover Zip	Check the zip runs freely and condition of zip teeth.
4.1.3	Anti-slip pads	Check for damage.
4.1.4	Fixing straps	Check condition and security.
4.1.5	Loop sheet	Check for broken/torn loops.
4.1.6	Sensor Pad	Check condition and security of tubes.
4.1.7	Soft/Hard Foam	Check condition.
4.1.8	Connectors	Check for damage and security.
4.1.9	Tubing	Check for security and ensure no kinks or twists.
4.1.10	Cells	Check for damage and security.
4.1.11	Manifold	Check for damage and security.
4.1.12	Partial Non-Return Valves	Check for condition.
4.1.13	Heel Protector	Check for damage and security.
4.1.14	Pop Studs	Check condition.
4.1.15	CPR Unit	Check operation of Fast Deflate mechanism.
4.1.16	CPR Transport Knob	Check operation.
4.1.17	CPR Inlet Manifold	Check for damage and free from obstructions.
4.1.18	Tubeset assembly	Check for damage and security of connection.
4.1.19	Alternating Head Cells	If fitted, Check the security of all the connectors.

5 Mattress Service

To carry out a service on the mattress, do the following:

5.1 Carry out the Mattress Maintenance Checks (Refer to Section 4).

5.2 Check the following components and replace if necessary:

5.2.1 CPR ‘O’ rings (Refer to Chapter 4, Page 4, Section 23).

5.2.2 CPR Manifold Gasket (Refer to Chapter 4, Page 25, Section 26).

5.3 Carry out an inflation test on the mattress in accordance with Chapter 6, Page 15, Section 9.

CHAPTER 3

PUMP REPAIR

1 General

This chapter details repair procedures for the Nimbus 2, Nimbus 3, DFS 2 and DFS 3 pumps. All repairs should be carried out by Huntleigh approved service personnel.

After carrying out a service or any repairs, the pump must be soaked for the recommended time (Refer to Chapter 2, Page 2, Section 2) and tested for serviceability. The table below defines the test requirements which must be carried out following certain repairs:

To carry out a flow, pressure and function test on the pump refer to Chapter 6, Page 1, Section 1.

To carry out the electrical tests on the pump refer to Chapter 6, Page 13, Section 8.

Table 1- Repair to Testing Requirements

Components / Assemblies	Flow/Pressure & Function Test	Electrical Safety
Compressor	Yes	Yes
Pressure Control	Yes	Yes
Rotors & Stators	Yes	Yes
Silencer Bag	Yes	No
High / Low Pressure Switches	Yes	Yes
Shuttle Assembly	Yes	Yes
Coils	Yes	Yes
Elbows & Connectors	Yes	No
AV Mounts	Yes	Yes
PCB	Yes	Yes
Front Casing	Yes	Yes
Rear Casing	No	No
Battery	No	Yes
Switches	No	Yes
Fuses	No	Yes
Electrical Connectors	No	Yes
Mains/Power Lead	No	Yes

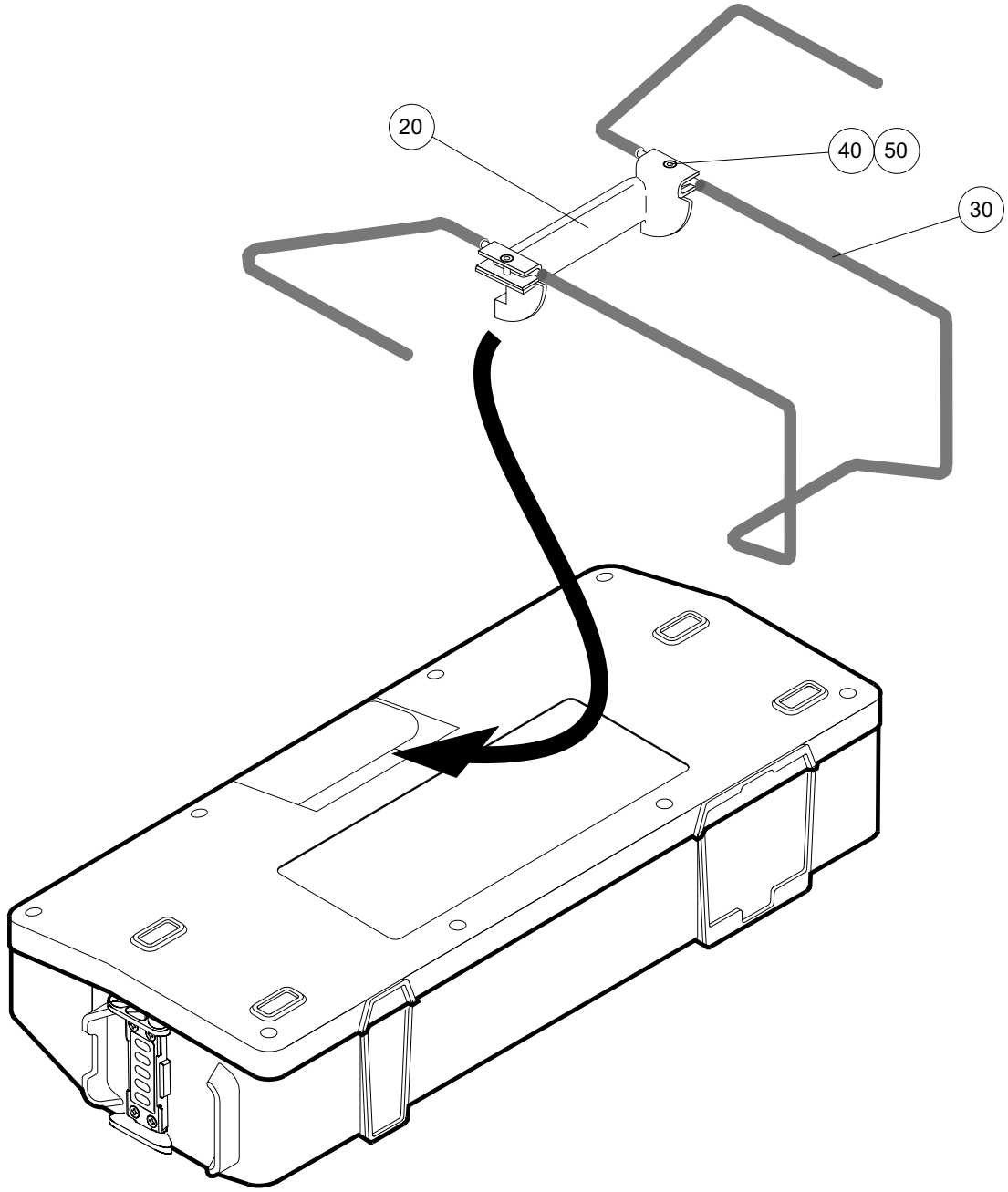


Figure 3 - Removing and installing the Hanging Bracket

Table 2 - Hanging Bracket Part List

Item	Part Number	Description	Qty
10	151123	Hanging Bracket Assembly	1
20	151427	Bracket	1
30	151428	Wire	1
40	FAS046	Screw M3 x 10 CSK	2
50	FAS216	Nut M3 x 0.5 Euro Series	2

2 Removing the Hanging Bracket

2.1 Ease the bottom of the hanging bracket off of the base of the pump.

2.2 Rotate the hanging bracket (Fig 3) and remove it from the handle recess in the back of the pump.

3 Installing the Hanging Bracket

3.1 Lay the pump face down and insert the bridge of the hanging bracket (Fig 3) into the handle recess of the pump.

3.2 Pull the bottom of the hanging bracket over the bottom of the pump and push firmly downwards so that the bracket clips into place around the base of the pump.

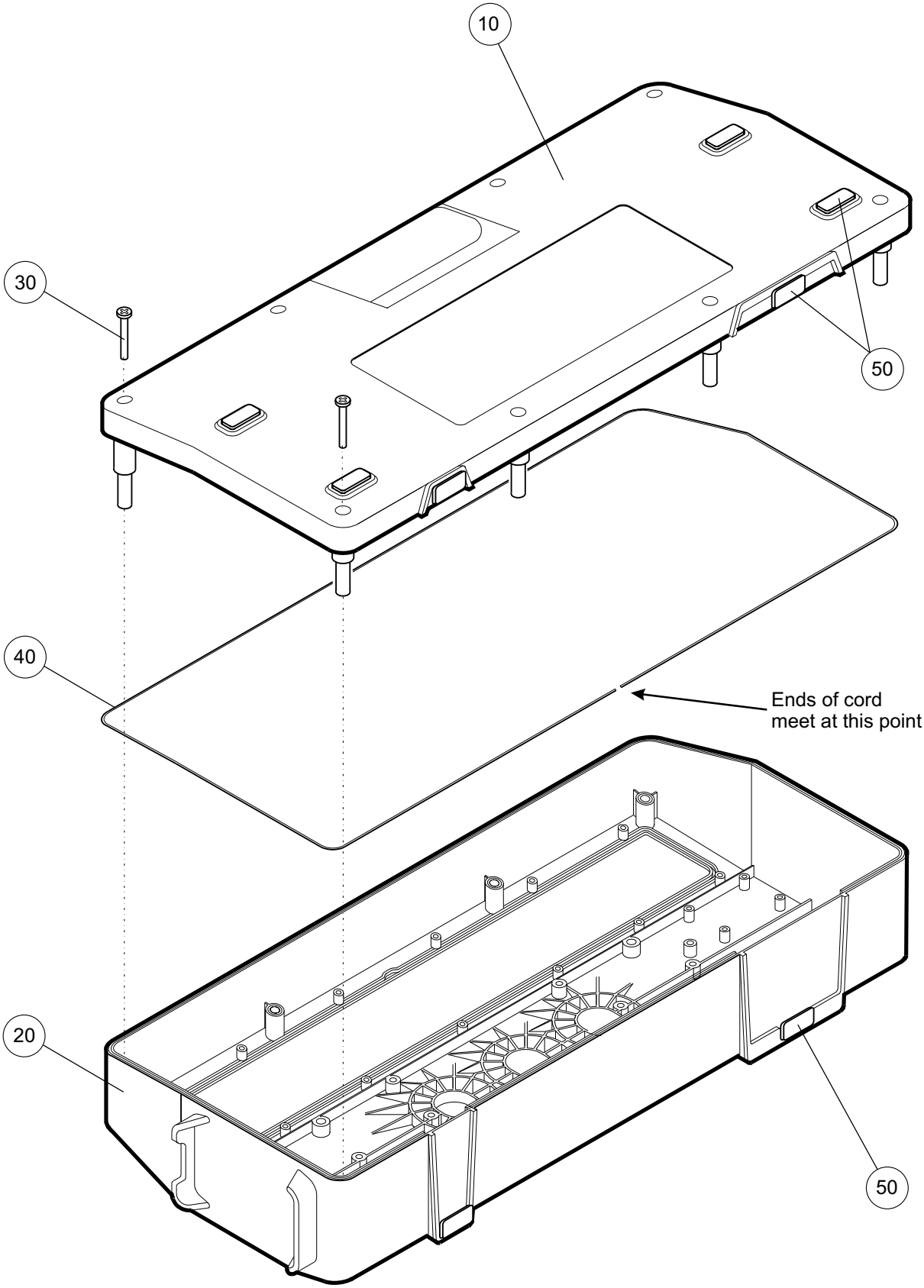


Figure 4 - Rear Case Assembly

4 Disassembling the Rear Case

WARNING:

BEFORE DISMANTLING THE PUMP UNIT , ENSURE THE UNIT HAS BEEN ISOLATED FROM THE POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

4.1 Remove the hanging bracket from the pump (Refer to Page 3, Section 2).

4.2 Place the pump unit on a flat surface with the front case (Fig 4, Item 20) face down.

4.3 Unscrew the 8 pan head screws (Fig 4, Item 30) and lift the rear case (Fig 4, Item 10) away from the front case (Fig 4, Item 20). Keep the screws (Fig 4, Item 30) in a safe place.

4.4 Carefully remove the neoprene sponge cord (Fig 4, Item 40) and inspect for damage.

5 Assembling the Rear Case

5.1 Assembly of the rear case is in the reverse order of disassembly.

5.2 Install the hanging bracket to the pump (Refer to Page 3, Section 3).

Table 3 - Rear Case Parts List

Item	Part Number	Description	Qty
10	151052	Rear Case Assembly	1
20	151307	Front Case	1
30	FAS 188	Pan Head Screws M4 x 30 mm	8
40	151105	Neoprene Sponge Cord (Dia 2 mm)	1
50	500381	Rubber foot	8

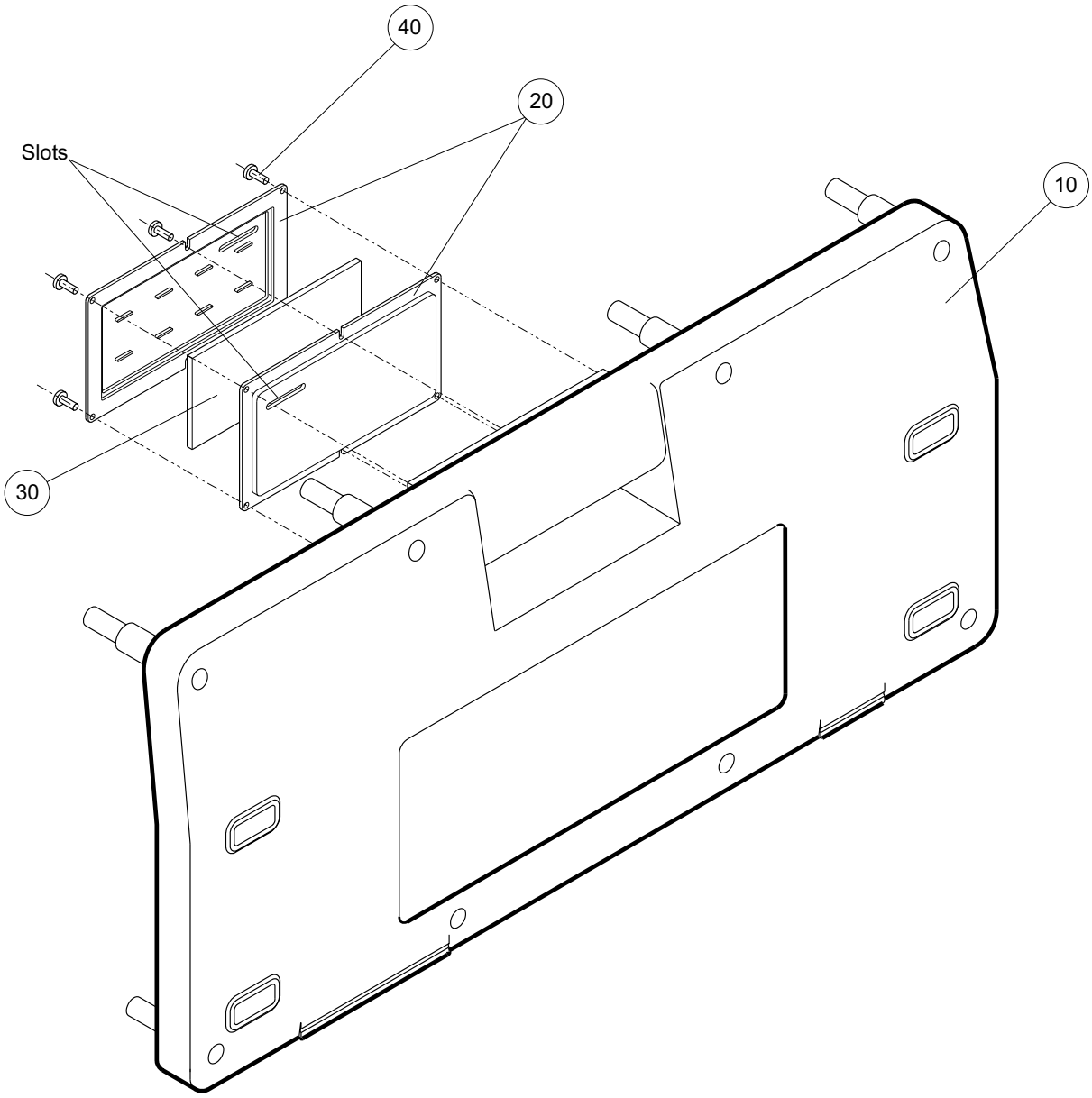


Figure 5 - Pump Filter Assembly

6 Disassembling the Pump Filter

6.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

6.2 Lay the Rear Case on a flat surface and remove the six screws (Fig 5, Item 40) and keep them in a safe place.

6.3 Remove the Filter Housing Plates (Fig 5, Item 20) and the Filter (Fig 5, Item 30).

6.4 Discard the old Filter.

7 Assembling the Pump Filter

7.1 Assembly of the new Pump Filter is in the reverse order of disassembly. Make sure the slots in the Filter Housing Plates (Fig 5, Item 20) are uppermost in the positions shown in Fig 5.

7.2 Assemble the Rear Case (Refer to Page 5, Section 5).

Table 4 - Pump Filter Parts List

Item	Part Number	Description	Qty
10	151308	Rear Case	1
20	151311	Filter Housing Plate	2
30	151312	Filter	1
40	FAS179	Pan Hd Self Tapping Screw (Dia 2.5mm x 10 mm)	6

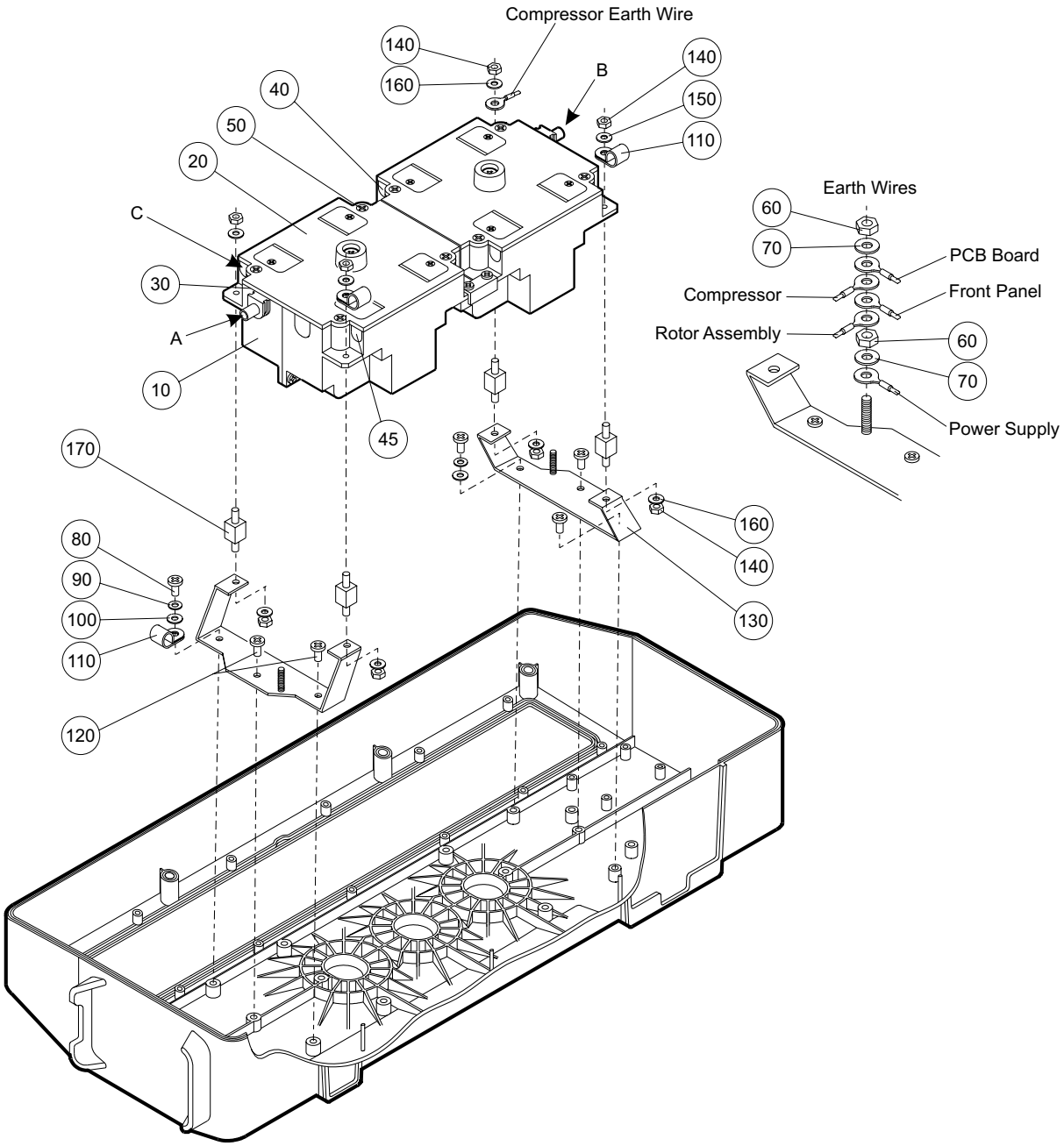


Figure 6 - Remove the Double Compressor Assembly and Disassemble the AV mounts

8 Removing the Double Compressor Assembly

8.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

8.2 Remove the screws (Fig 6, Item 50) and the compressor lids (Fig 6, Item 20). Lift the four pairs of power cables, together with the rubber grommets, out from the side of each compressor casing. Make sure the blanking grommets (Fig 6, Item 40) on the inner side of each compressor remain in the compressor casing.

8.3 If necessary, replace the items that follow:

8.3.1 The compressor Shuttles (Refer to Page 15, Section 15).

8.3.2 The compressor Coils (Refer to Page 15, Section 16).

8.4 Disconnect the high pressure switch hose and the compressor hose from the compressor (Fig 6, A and B) and disconnect the silencer bag (Page 46, Fig 26, Item 10) from the compressor hose.

8.5 For Nimbus 3 and DFS 3 pumps only, remove the Bio Filter (Refer to Page 49, Section 41).

8.6 Cut and remove any cable ties as necessary and disconnect the 2 compressor power cables from the PCB.

8.7 Remove the items that follow from the left compressor bracket:

8.7.1 Screw (Fig 6, Item 80) and washers (Fig 6, Items 90 and 100).

8.7.2 ‘P’ Clip (Fig 6, Item 110).

8.8 Remove the nuts, washers (Fig 6, Items 140 and 160) and the compressor earth wire from the top of the compressor.

8.9 Remove the nuts, washers and ‘P’ clips (Fig 6, Items 140, 150 and 110) together with the compressor hose. The ‘P’ clips can remain on the hose.

8.10 Remove the double compressor assembly (Fig 6, Item 10).

9 Installing the Double Compressor Assembly

9.1 Carefully install the double compressor assembly into the pump onto the AV mounts on the compressor brackets in the pump casing.

9.2 Install the screw, the washers and the ‘P’ Clip (Fig 6, Items 80, 90, 100 and 110) to the left compressor bracket. Make sure that the ‘P’ Clip is around the 2 of the compressor power cable wires which form the longer loop from point C in Fig 6.

9.3 Connect the 2 compressor power cables to the PCB (Refer to Fig 11 or Fig 15).

9.4 Attach the high pressure switch hose to the compressor (Fig 6, A) and the silencer bag to the compressor hose (Page 46, Fig 26, Item 10). Attach the compressor hose to the compressor (Fig 6, B).

9.5 If necessary, replace the compressor lid gaskets (Fig 6, Item 30) as follows:

9.5.1 Remove the old gasket and clean the compressor lid.

9.5.2 Peel the back off of the new gasket (Fig 6, Item 30) and stick in position on the lid.

9.6 Make sure that the blanking grommets (Fig 6, Item 40) are installed in the compressor casings and install the compressor lids (Fig 6, Item 20). Secure the lids with screws (Fig 6, Item 50).

9.7 Install cable ties where they were removed.

9.8 Assemble the rear case (Refer to Page 5, Section 5).

10 Removing the AV Mounts

10.1 Remove the double compressor assembly (Refer to Page 9, Section 8).

10.2 Remove the items that follow from the earthing stud on the right compressor bracket:

10.2.1 The nut and washer (Fig 6, Items 60 and 70).

10.2.2 The 4 earth wire connectors (PCB, Compressor, Front Panel and Rotary).

Note : On Nimbus 3 and DFS 3 pumps there is only one earth wire for the PCB and Front Panel.

10.2.3 The nut, washer (Fig 6, Items 60 and 70) and the Power Supply earth wire connector.

10.3 Remove the screws (Fig 6, Item 120) and the left compressor bracket (Fig 6, Item 130) from the pump casing.

10.4 Remove the screw and washers (Fig 6, Items 80, 90 and 100) from the right compressor bracket

10.5 Remove the screws (Fig 6, Item 120) and the right compressor bracket from the pump casing

10.6 Remove the nuts, washers and AV mounts (Fig 6, Items 140, 160 and 170) from each compressor bracket.

11 Installing the AV Mounts

11.1 Install the AV mounts, the washers and the nuts (Fig 6, Items 170, 160 and 140) to each compressor bracket (Fig 6, Item 130).

11.2 Install the right compressor bracket (with the earth label) into the pump casing. Secure the bracket with a screw and washers (Fig 6, Items 80, 90 and 100) at the back, nearest the PCB.

11.3 Install screws (Fig 6, Item 120) to the remaining holes in the bracket.

11.4 Install the items that follow to the earthing stud on the right compressor bracket:

11.4.1 The Power Supply earth wire connector.

11.4.2 The washer and nut (Fig 6, Items 70 and 60).

11.4.3 The 4 earth wire connectors (Rotary, Front Panel, Compressor and PCB).

Note : On Nimbus 3 and DFS 3 pumps there is only one earth wire for the PCB and Front Panel.

11.4.4 The washer and nut (Fig 6, Items 70 and 60).

11.5 Install the left compressor bracket and secure with the screws (Fig 6, Item 120).

Note : Do not install the screw, washers and 'P' clip to the left compressor bracket at this stage.

11.6 Install the double compressor assembly (Refer to Page 9, Section 9).

Table 5 - Compressor Parts List

Item	Part Number	Description	Qty
10	165076	Double Compressor Assembly - 220V (UK, EURO)	1
	165074	Double Compressor Assembly - 120V (USA)	
	165077	Double Compressor Assembly - 100V (Japan 60Hz)	1
	165078	Double Compressor Assembly - 100V (Japan 50Hz)	1
20	165311	Compressor Lid	2
30	165312	Compressor Lid Gasket	2
40	165300	Grommet Blank	4
45	165303	Grommet Blank - Lead through	4
50	FAS177	Screw M4 8mm Pozi C'SK Head	8
60	FAS144	Nut M4 Full	2
70	FAS053	Washer M4 Anti-Vib	2
80	FAS093	Screw M4 12mm	2
90	FAS053	Washer M4 Anti-Vib	2
100	FAS160	Washer M4 Plain	2
110	151386	'P' Clip No.6	3
120	FAS095	Screw M4 10mm Pan Head Pozi	4
130	151310	Compressor Mounting Bracket	2
140	FAS178	Nut 8/32 UNC	8
150	FAS160	Washer M4 Plain	6
160	FAS053	Washer M4 Anti-Vib	2
170	151364	AV Mount	4

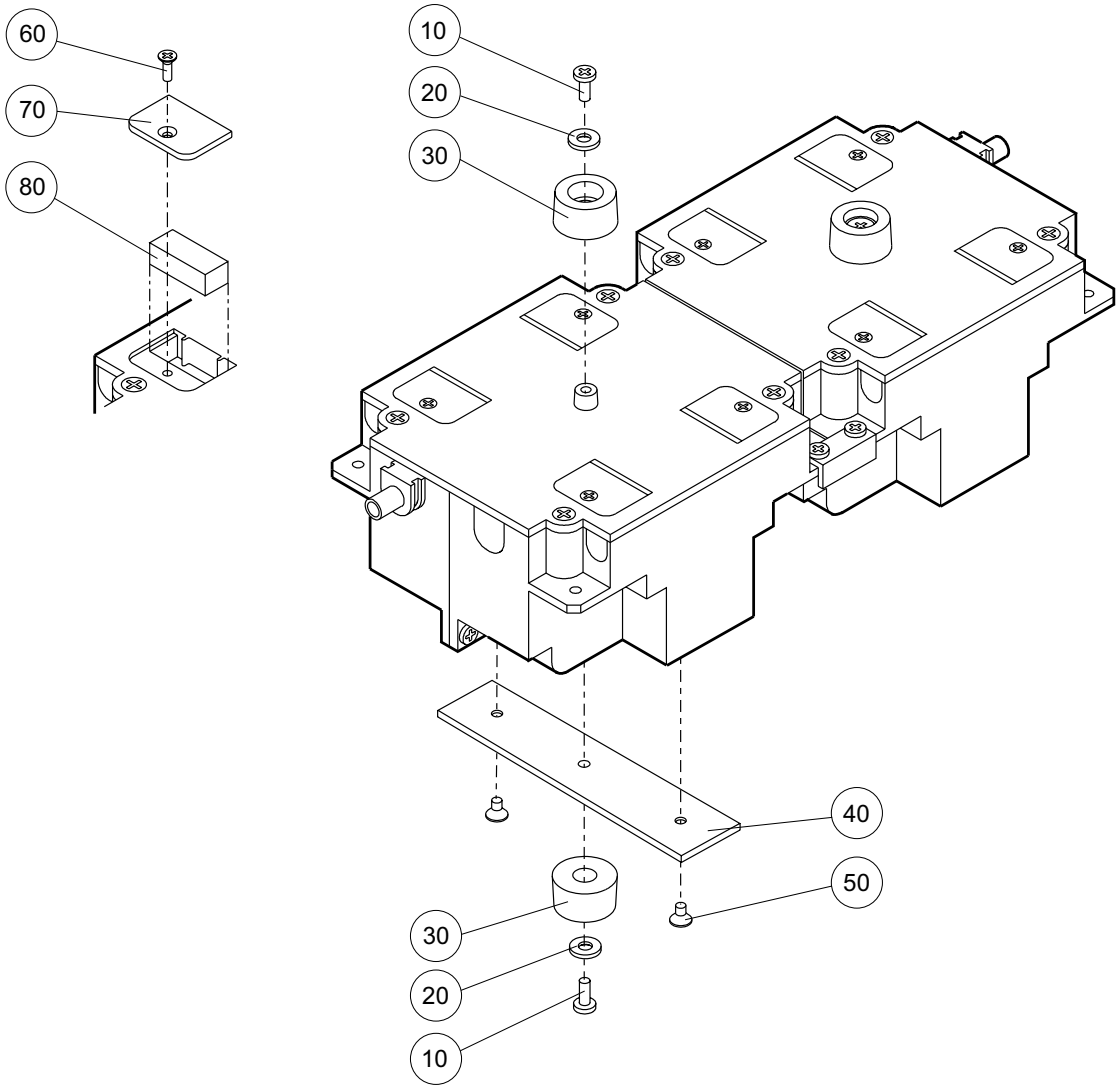


Figure 7 - Replacing the Compressor Bump Stops

Table 6 - Compressor Bump Stops Parts List

Item	Part Number	Description	Qty
10	FAS051	Screw M4 6mm Pan Head	4
20	FAS160	Washer M4 Plain	4
30	165310	Bump Stop	4
40	165324	Bump Stop Plate	2
50	FAS177	Screw M4 8mm C'SK Head	4
60	FAS193	Screw M3 5mm Pan Head	8
70	165314	Filter Lid	8
80	165313	Filter	8

12 Replacing the Compressor Filters

12.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

12.2 For each compressor filter (8 in total):

12.2.1 Remove the screw and the compressor filter lid (Fig 7, Items 60 and 70).

12.2.2 Replace the compressor filter (Fig 7, Item 80).

12.2.3 Install the compressor filter lid and the screw (Fig 7, Items 60 and 70).

12.3 Assemble the rear case (Refer to Page 5, Section 5).

13 Removing the Compressor Bump Stops

13.1 To remove the Compressor Bump Stops (Fig 7, Item 30) from the top of the compressors:

13.1.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

13.1.2 Remove the screws, washers and the Bump Stops (Fig 7, Items 10, 20 and 30).

13.2 To remove the Compressor Bump Stops (Fig 7, Item 30) from the bottom of the compressors:

13.2.1 Remove the Double Compressor Assembly (Refer to Section 8).

13.2.2 Remove the screws, washers and the Bump Stop (Fig 7, Items 10, 20 and 30).

13.2.3 If necessary, remove the screws and the plate (Fig 7, Items 50 and 40).

14 Installing the Compressor Bump Stops

14.1 To install the Compressor Bump Stops (Fig 7, Item 30) from the top of the compressors:

14.1.1 Install the screws, washers and the Bump Stop (Fig 7, Items 10, 20 and 30).

14.1.2 Assemble the rear case (Refer to Page 5, Section 5).

14.2 To install the Compressor Bump Stops (Fig 7, Item 30) from the bottom of the compressors:

14.2.1 If necessary, install the screws and the plate (Fig 7, Items 50 and 40).

14.2.2 Install the screws, washers and the Bump Stops (Fig 7, Items 10, 20 and 30).

14.2.3 Install the Double Compressor Assembly (Refer to Page 9, Section 9).

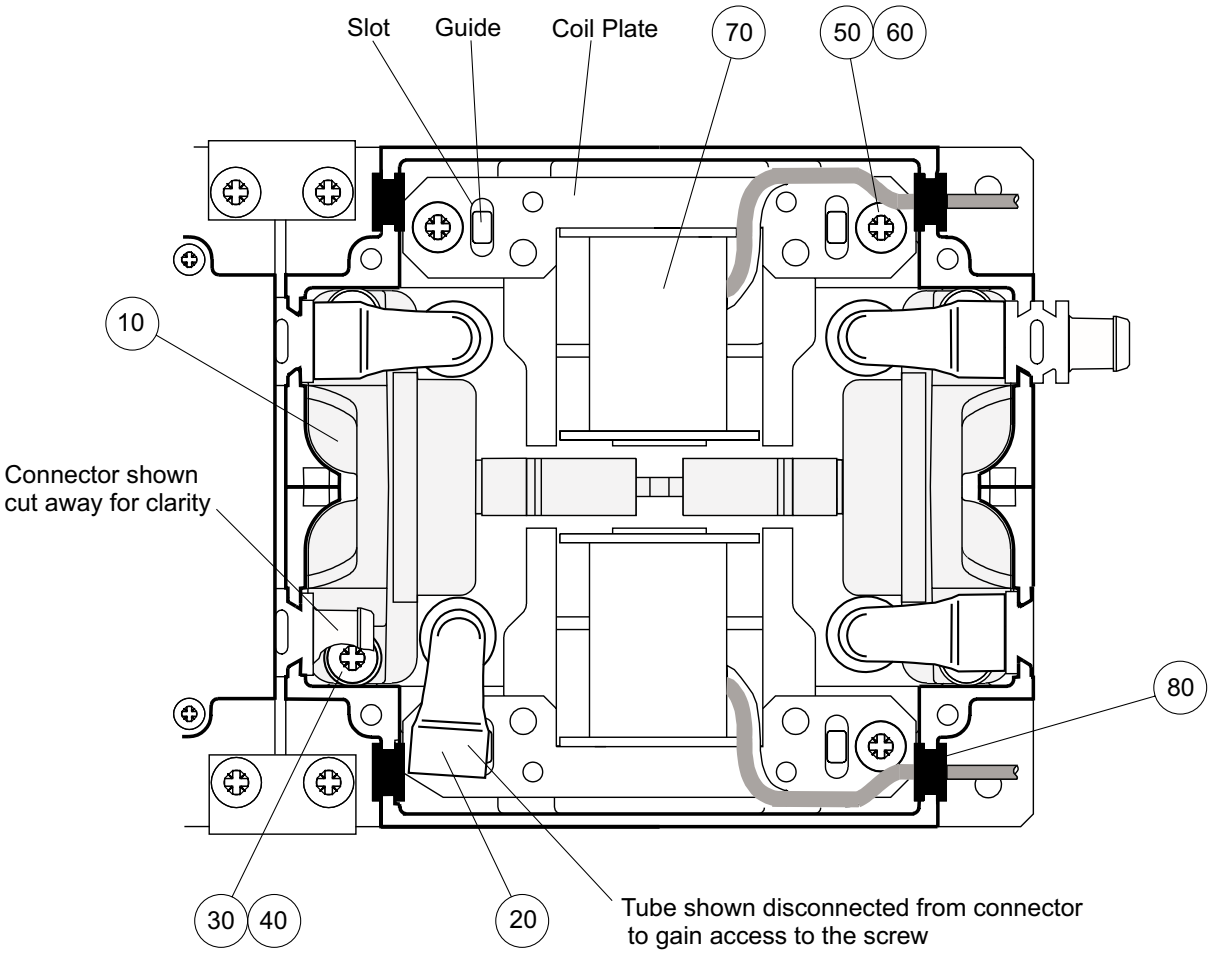


Figure 8 - Replacing the Shuttles and the Coils of the Compressor

Table 7 - Shuttle and Coil Parts List and Special Tool

Item	Part Number	Description	Qty
10	165054	Shuttle 63 Shore (UK, EURO, Japan 50Hz)	2
	165092	Shuttle 70 Shore (USA, Japan 60Hz)	2
20	165306	Tube - Outlet	8
30	FAS176	Screw M4 12mm Pan Head	8
40	FAS207	Washer Disc Spring ID4.2 OD10	8
50	FAS172	Screw M4 10mm Pan Head	8
60	FAS206	Washer Belleville Serated Safety	8
70	165058	Coil (pair) (UK, EURO)	2
	165107	Coil (pair) (USA)	2
	165085	Coil (pair) (Japan 50 & 60Hz)	2
80	165303	Grommet lead-through	2
90	MIS155	Spacer saddle gauge set (5 gauges A to E)	1

15 Replacing the Shuttle Assemblies

15.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

15.2 Remove the screws (Fig 6, Item 50) and the compressor lids (Fig 6, Item 20). Make sure the blanking grommets remain in the compressor casing.

15.3 Remove each shuttle assembly as follows:

15.3.1 Using a flat head screwdriver, carefully prise each tube (Fig 8, Item 20) off of its connector.

15.3.2 Remove the screws and washers (Fig 8, Items 30 and 40) from the shuttles (Fig 8, Item 10).

15.3.3 Remove and discard the shuttles (Fig 8, Item 10) from the compressor. Make sure the small O-rings in the base of the shuttle are removed with the shuttle.

15.4 Install each shuttle assembly as follows:

15.4.1 Ensure the O-rings are in the bottom of the shuttles and install the new shuttles (Fig 8, Item 10) into the compressor. Install and tighten the screws and washers (Fig 8, Items 30 and 40) to secure each shuttle in position.

15.4.2 Push each tube (Fig 8, Item 20) fully onto its connector.

15.5 Install the compressor lids (Fig 6, Item 20) and secure with screws (Fig 6, Item 50).

15.6 Assemble the rear case (Refer to Page 5, Section 5).

16 Replacing the Coil Assemblies

16.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

16.2 Remove the screws (Fig 6, Item 30) and the relevant compressor lid (Fig 6, Item 20). Make sure the blanking grommets remain in the compressor casing.

16.3 Disconnect the power cables of the coil assemblies (Fig 8, Item 70) from the PCB display board. Lift the grommets (Fig 8, Item 80), holding the power cables, out of the slots in the compressor.

16.4 If the coils are being removed from the compressor at the 5-way connector end of the pump, remove the screw, washers and ‘P’ clip (Fig 6, Items 80, 90, 100 and 110) from the compressor bracket.

16.5 Remove the screws and washers (Fig 8, Items 50 and 60) from the coils.

16.6 Lift the coils (Fig 8, Item 70) out of the compressor.

16.7 Install the new coils into the compressor, locating the guides in the slots of the coil plates.

16.8 Loosely install the screws and washers (Fig 8, Items 50 and 60).

16.9 Move both coils away from the shuttle and carefully place the appropriate saddle gauge over the shuttle magnet, in between the coils (Fig 8, Item 70).

Note : The spacer saddle gauge set (Item 90) comprises 5 saddle gauges. The gauges provide adjustment in steps of 0.5 litres/minute with gauge A giving maximum air flow and gauge E giving minimum air flow.

16.10 Move the coils such that they rest against the setting tool. Make sure the coils are square to the tool and are centrally disposed in the compressor.

16.11 Without moving the coils, tighten the screws (Fig 8, Item 50).

16.12 Remove the setting tool.

16.13 Install the grommets (Fig 8, Item 80) into the slots in the compressor and connect the power cables to the PCB display board.

16.14 Connect the hose to the compressor (The hose that leads from the silencer bag or the hose from the high pressure switch, depending on the compressor).

16.15 If the coils are being installed to the compressor at the 5-way connector end of the pump, install the screw, the washers and the 'P' Clip (Fig 6, Items 80, 90, 100 and 110) to the other bracket. Make sure that the 'P' Clip is around 2 of the compressor power cable wires which form the longer loop.

16.16 Make sure that the blanking grommets are installed in the compressor casing and install the compressor lid (Fig 6, Item 20). Secure the lid with screws (Fig 6, Item 30).

16.17 Assemble the rear case (Refer to Page 5, Section 5)

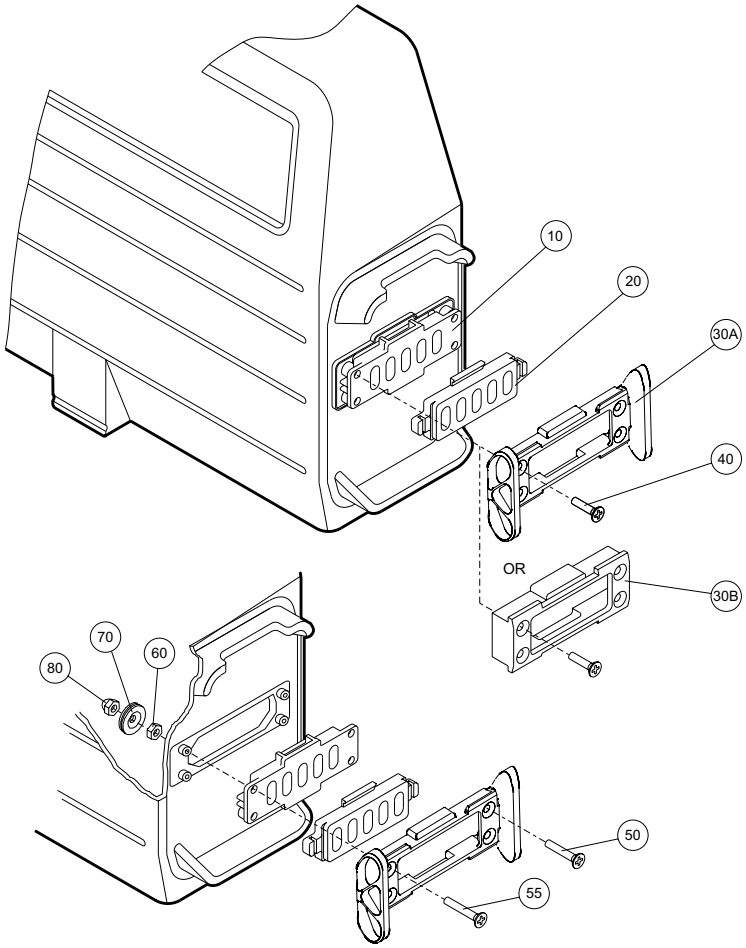


Figure 9 - Replacing the Manifold Gasket

17 Replacing the Manifold Gasket

17.1 Remove the manifold screws (Fig 9, Item 40).

17.2 Remove the manifold outer (Fig 9, Item 30A or 30B) and the manifold gasket (Fig 9, Item 20). The manifold inner (Fig 9, Item 10) will remain connected to the tubes inside the pump.

17.3 Install the new manifold gasket (Fig 9, Item 20), the manifold outer (Fig 9, Item 30A or 30B) and the screws (Fig 9, Item 40).

Table 8 - Manifold Parts List

Item	Part Number	Description	Qty
10	151480	Manifold 5 Way Barbed	1
20	151304	5 Way Manifold	1
30A	151476	Connector Manifold Braced Grey (Nimbus 2 and DFS 2)	1
	151471	Connector Manifold Braced Blue (Nimbus 3 and DFS 3)	1
30B	151316	Manifold Outer (Old Type)	1
40	FAS233	Screw M3 x 6mm C'SK Head	4
50	FAS041	Screw M3 x 20mm C'SK Head	2
55	FAS196	Screw M3 x 25mm C'SK Head	2
60	VIB004	Grommet	4
70	FAS098	Nut M3 Full	4
80	197312	Nut M3 Domed Plastic	4

17.4 If the screws will not tighten and the threads in the case have been stripped, repair the manifold as follows:

17.4.1 Disassemble the Rear Case (Refer to Section 4).

17.4.2 Remove the manifold screws, the manifold outer and the manifold gasket (Fig 9, Items 40, 30A or 30B, 20).

17.4.3 Disconnect the four tubes from the manifold inner (Fig 9, Item 10).

CAUTION: Do not damage the tubes and other components inside the pump when drilling the case.

17.4.4 Using a 3.2 mm drill, carefully drill through the bosses of the casing in the positions of the screw holes. Clean the holes and ensure no swarf remains in the pump.

17.4.5 Position the manifold inner on the outside of the case.

17.4.6 Press the nuts (Fig 9, Item 60) into the vibration grommets (Fig 9, Item 70).

17.4.7 Assemble the manifold gasket (Fig 9, Item 20), the manifold outer (Fig 9, Item 30A) to the case.

17.4.8 Install bolts (Fig 9, Item 55) into the 2 holes nearest to the pressure sensor unit and bolts (Fig 9, Item 50) into the other 2 holes.

17.4.9 Install the vibration grommets and the nuts (Fig 9, Items 60 and 70) and the domed nuts (Fig 9, Item 80). Tighten the nuts to secure the manifold to the case.

17.4.10 Connect the four tubes to the inside of the manifold (Refer to Fig 26)

17.4.11 Assemble the rear case (Refer to Page 5, Section 5).

18 Removing the Rotary Valve Assembly

Note : The Rotary Valve Assembly shown in Figure 10 is from a Nimbus 2/DFS 2 pump. The procedure for a Nimbus 3/DFS 3 pump is identical to that detailed below, the only difference being the Rotary Valve Assembly in a Nimbus 3/DFS3 pump is larger in size.

18.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

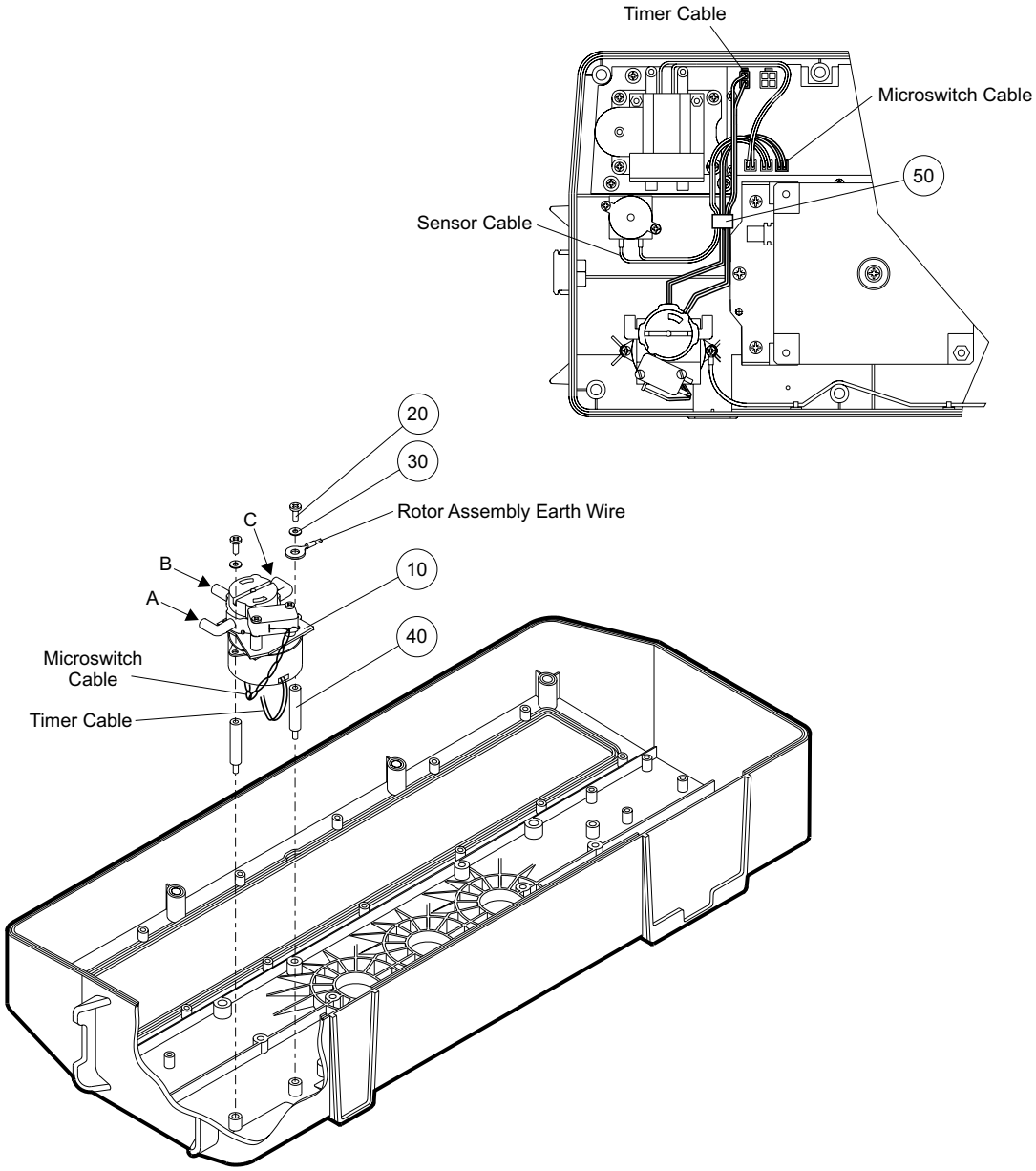


Figure 10 - Replacing the Rotor Assembly

18.2 Using a small flat head screwdriver, carefully prise the hoses off the rotary valve assembly at connections A, B and C.

18.3 Disconnect the microswitch and timer cables from the PCB display board.

18.4 Carefully remove the cable tie (Fig 10, Item 50) holding the three cables.

18.5 Remove the screws (Fig 10, Item 20), the washers (Fig 10, Item 30) and the earth wire from the rotary valve assembly (Fig 10, Item 10).

18.6 Remove the rotary valve assembly (Fig 10, Item 10) from the pump case.

18.7 If the pillars (Fig 10, Item 40) are damaged then replace as necessary.

19 Installing the Rotary Valve Assembly

19.1 If necessary, install the pillars (Fig 10, Item 40) into the pump case.

19.2 Install the rotary valve assembly (Fig 10, Item 10) onto the pillars (Fig 10, Item 40). Make sure the microswitch and timer cables lead underneath the rotary valve assembly, between the pillars.

19.3 Install the screws (Fig 10, Item 20), washers (Fig 10, Item 30) and the rotary valve assembly earth wire. Tighten the screws to secure the rotary valve assembly.

19.4 Connect the microswitch and timer cables to the PCB display board and cable tie the wires as shown in Fig 10. Install a cable tie (Fig 10, Item 50) around the microswitch, timer and sensor cables as shown.

19.5 Connect the hoses to the tubes A, B and C on the rotary valve assembly (Fig 10, Item 10).

Note : Fig 26 shows the full configuration of the hoses.

19.6 Assemble the rear case (Refer to Page 5, Section 5).

Table 9 - Rotary Valve Assembly Parts List

Item	Part Number	Description	Qty
10	151056	Rotary Valve Assembly (Nimbus 2 - UK, EURO)	1
	151128	Rotary Valve Assembly (Nimbus 3 - UK, EURO)	1
	151155	Rotary Valve Assembly (Nimbus 3 - Japan 60Hz, DFS 3)	1
	151156	Rotary Valve Assembly (Nimbus 3 - Japan 50Hz)	1
	151110	Rotary Valve Assembly (Nimbus 2 - Japan 60Hz, DFS 2)	1
	151113	Rotary Valve Assembly (Nimbus 3 - Japan 50Hz)	
20	FAS043	Screw M3 x 6 Pan Hd	2
30	FAS002	Washer 6BA Anti-Vib	2
40	151348	Pillar M3 x 30 mm	2
50	BP196	Cable tie	1

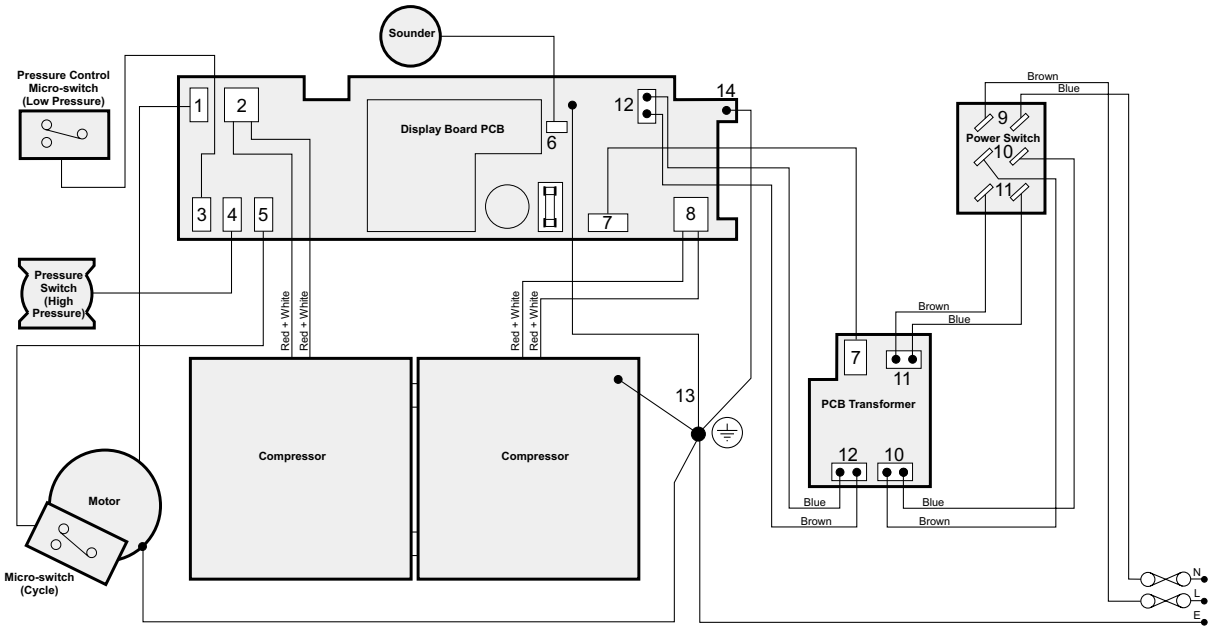


Figure 12 - Wiring Schematic for Nimbus 2/DFS 2 Pumps with 2 Circuit Boards

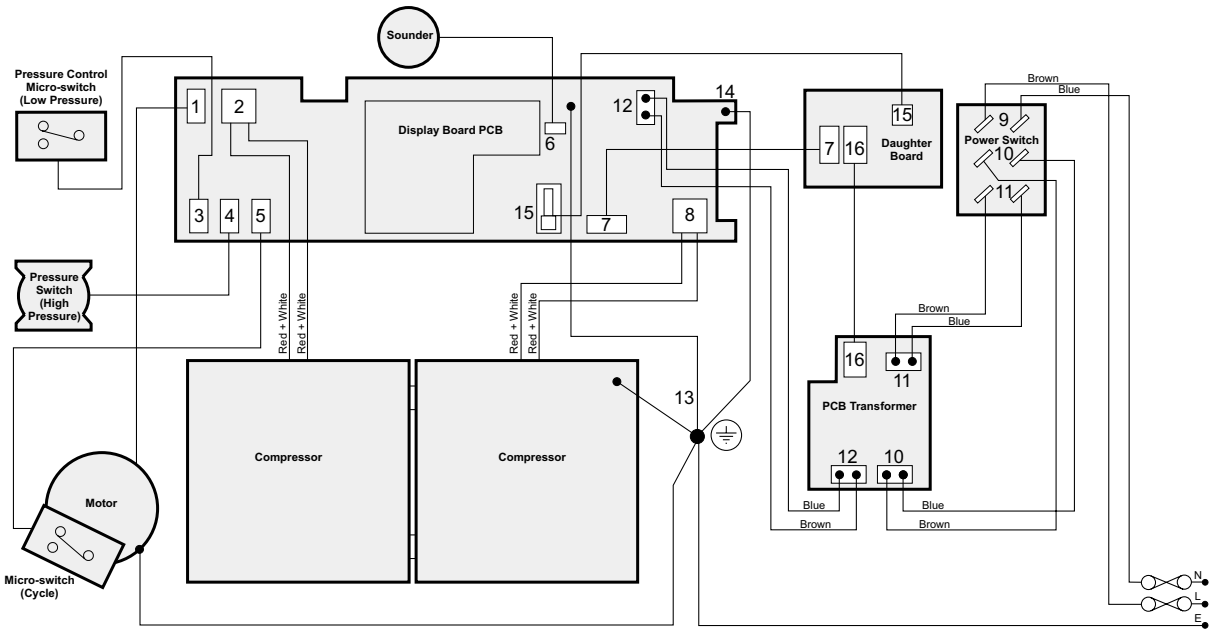


Figure 11 - Wiring Schematic for Nimbus 2/3 Pumps with 3 Circuit Boards

20 Circuit Boards

CAUTION : Electrostatic discharge can seriously damage the display panel PCB. Prior to replacement or handling, adequate earthing precautions must be taken.

There are three different configurations of circuit boards fitted to Nimbus pumps. The following description will determine which configuration the pump has and therefore which repair procedure to follow.

Note : If any of the original Nimbus 2 or DFS 2 circuit boards need to be replaced, a new style display panel must be fitted. This repair replaces all three circuit boards and the display panel.

When replacing original circuit boards with a new style display panel PCB, the front panel must also be replaced. To secure the new style display PCB, 2 additional fixing screws, washers and spacers are needed (Table 10 Items 20, 30 and 50).

Original Nimbus 2 and DFS 2 pumps consist of two circuit boards as follows:

- Old style Display Panel PCB (Part No 151083)
- Power Supply Board (Part Nos: Nimbus 2 - 151084, DFS 2 - 151109)

Nimbus/DFS 2 and early Nimbus/DFS 3 pumps can consist of three circuit boards as follows:

- Old style Display Panel PCB (Part No 151083)
- Power Supply Board (Part Nos: Nimbus 2/3 - 151084, DFS 2/3 - 151109)
- Daughter Board (Part No 151423 - This was fitted as a modification to Nimbus 2 pumps)

Modified Nimbus 2, later Nimbus 3, DFS 2 and DFS 3 pumps consist of one circuit board as follows:

- New style Display Panel PCB (Part Nos: Nimbus 2/3 - 151478, DFS 2/3 - 151477)

21 Removing the Old Style Display Panel PCB, the PCB Transformer and Daughter Board (if fitted).

21.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

21.2 Cut and remove any cable ties as necessary and disconnect the wires as follows:

- 1 Rotary Assembly Motor
- 2 Compressor Power Cable
- 3 Pressure Control Micro-switch (Low Pressure)
- 4 Pressure Switch (High Pressure)
- 5 Rotary Assembly Micro-switch
- 6 Sounder
- 7 Display Panel PCB to PCB Transformer (or Display Panel PCB to Daughter Board)
- 8 Compressor Power Cable
- 9 Power Switch to Power Supply Fuses
- 10 Power Switch to PCB Transformer (top)
- 11 Power Switch to PCB Transformer (bottom)
- 12 Display Panel PCB to PCB Transformer
- 13 Display Panel PCB Earth wire
- 14 Front Panel Earth wire
- 15 Daughter Board Fuse Link (if fitted)
- 16 Daughter Board to PCB Transformer (if fitted)

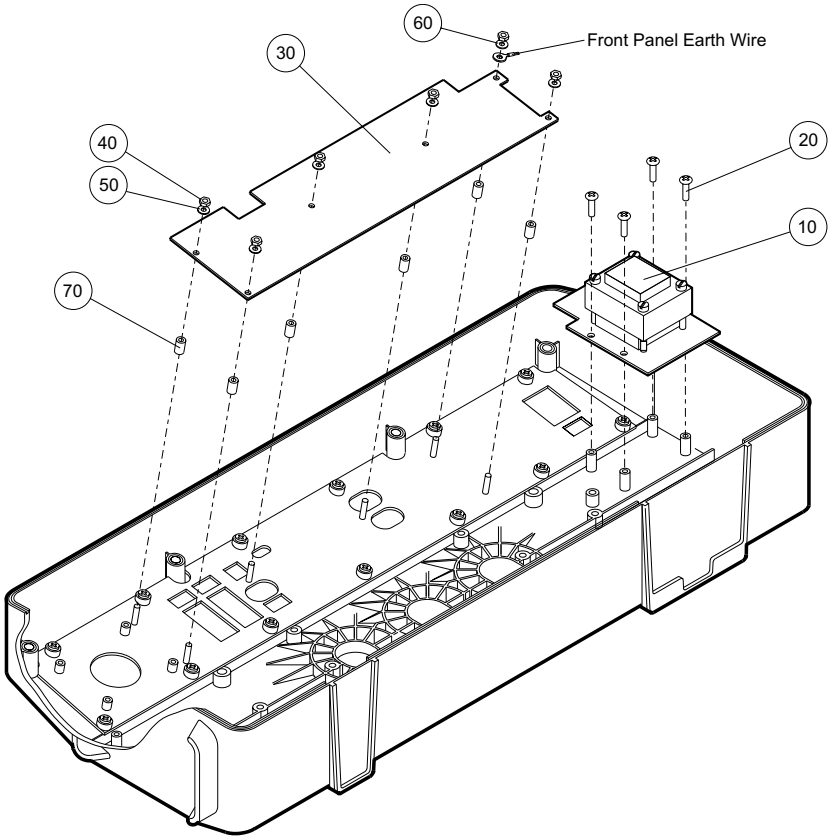


Figure 14 - Removing the Old Style Display Board PCB and PCB Transformer

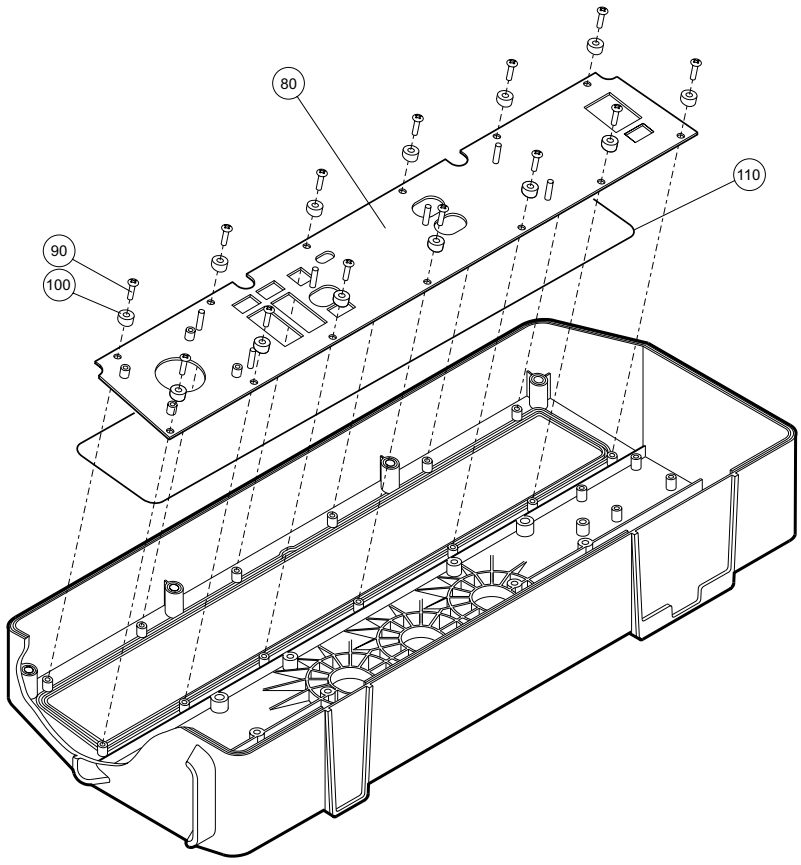


Figure 13 - Removing the Old Style Front Panel

21.3 Remove the Pressure Control Assembly (Refer to Page 29, Section 24).

21.4 Remove the screws (Fig 14, Item 20) and the PCB Transformer (Fig 14, Item 10) from the pump.

21.5 Remove the nuts and washers (Fig 14, Items 40, 50 and 60) from the Display Board PCB (Fig 14, Item 30).

21.6 Remove the Display Board PCB (Fig 14, Item 30) and the spacers (Fig 14, Item 70).

21.7 Remove the middle screw from each compressor bracket and slacken the remaining screws, such that the compressor assemblies can move away from the front panel.

21.8 Remove the screws and fixing caps (Fig 13, Items 90 and 100) and then remove the Front Panel (Fig 13, Item 80).

21.9 Remove and discard the neoprene sponge cord (Fig 13, Item 110).

Note: The neoprene sponge cord is no longer fitted to the front panels.

21.10 Push the spring clips of the Power Switch in and remove it from the Front Panel.

Table 10 - Display Board PCB, Transformer & Front Panel Parts List

Item	Part Number	Description	Qty
10	REF	Power Supply PCB 240V (Nimbus 2 and Early Nimbus 3)	1
	REF	Power Supply PCB 120V (DFS 2)	
20	REF	Screw	4
30	REF	Old Style Display Board PCB	1
40	FAS098	Nut M3 Full	6
50	FAS091	Washer M3 Nylon	5
60	FAS002	Washer 6BA Anti-Vib	1
70	151352	Spacer 8.5 mm Long x 3.2 mm x 6 mm	6
80	REF	Old Style Front Panel	1
90	FAS145	Screw 3 DIA 8mm Pozi Pan Head PT	13
100	151309	Fixing Cap Front Panel	13
110	REF	Neoprene Sponge Cord (Dia 2 mm)	1

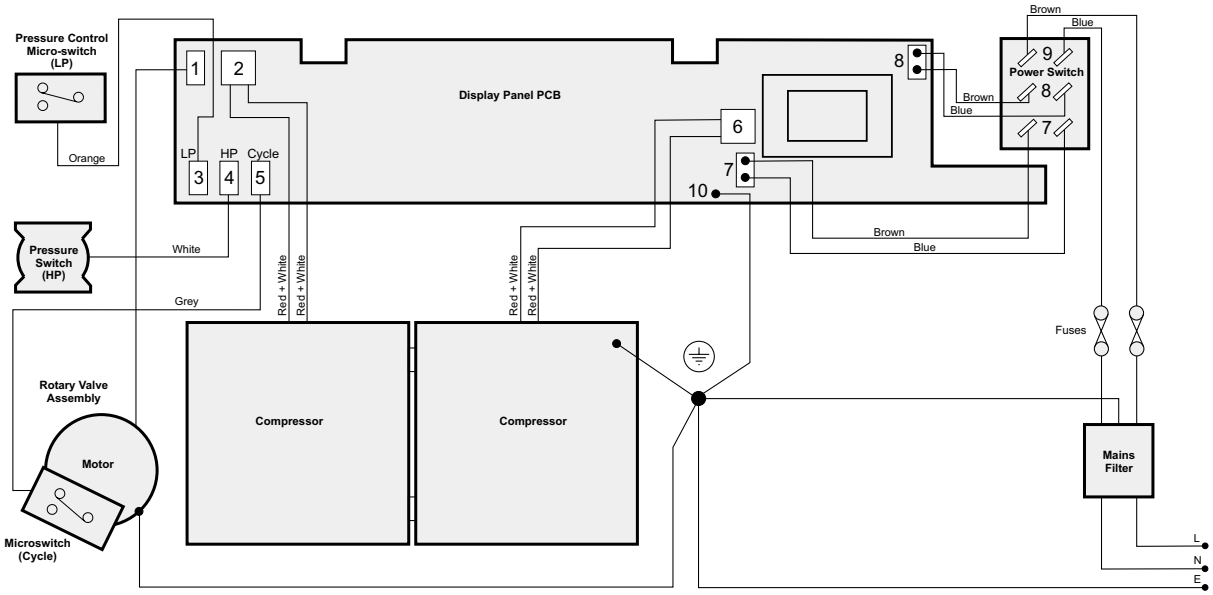


Figure 15 - Wiring Schematic for Nimbus 2/3 and DFS 2/3 Pumps with 1 Circuit Board

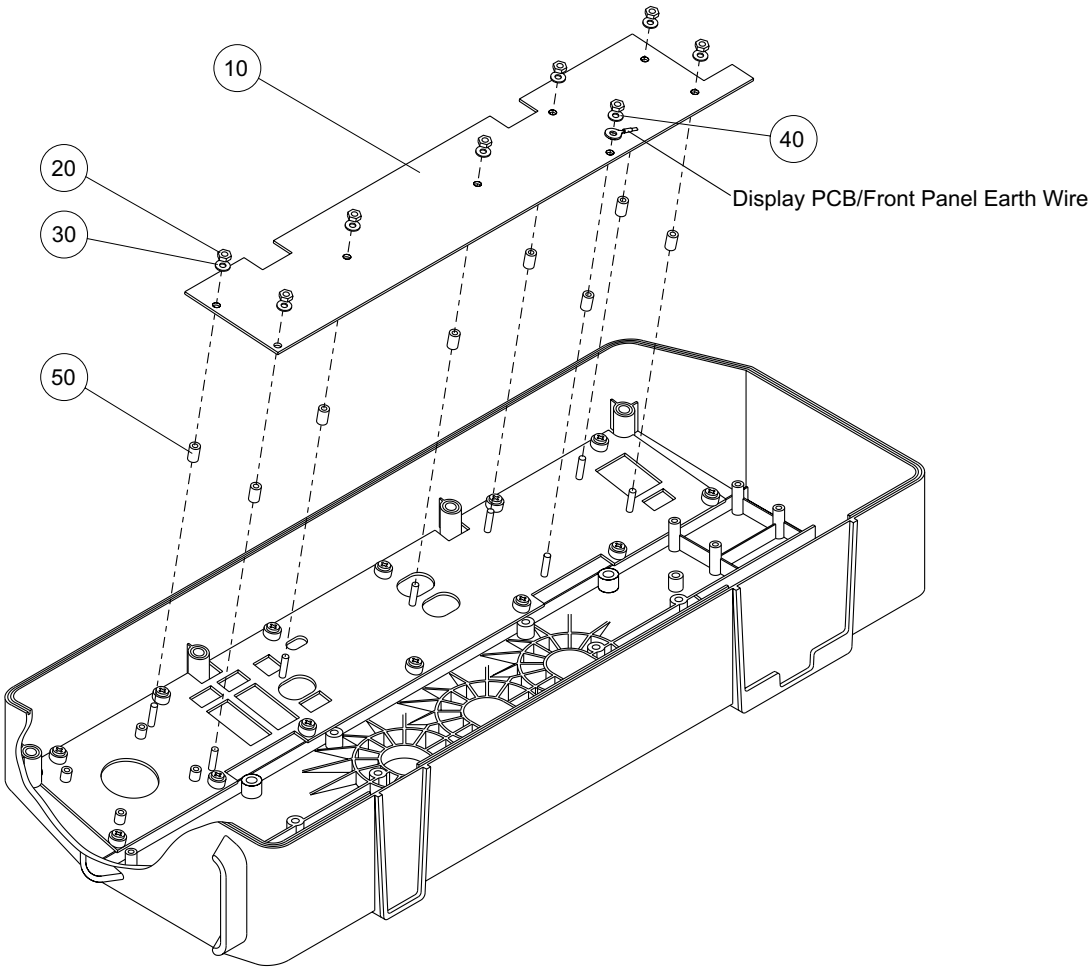


Figure 16 - Replacing the New Style Display Board PCB

22 Removing the New Style Display Panel PCB

22.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

22.2 Cut and remove any cable ties as necessary and disconnect the wires as follows:

- 1 Rotary Assembly Motor
- 2 Compressor Power Cable
- 3 Pressure Control Micro-switch -Low Pressure (LP)
- 4 Pressure Switch -High Pressure (HP)
- 5 Rotary Assembly Micro-switch (Cycle)
- 6 Compressor Power Cable
- 7 Power Switch to Display Panel PCB (bottom)
- 8 Power Switch to Display Panel PCB (top)
- 9 Power Switch to Power Supply Fuses
- 10 Display PCB/Front Panel Earth wire

22.3 Remove the Pressure Control Assembly (Refer to Page 29, Section 24).

22.4 Remove the nuts (Fig 16, Item 20) and washers (Fig 16, Item 30) from the Display Board PCB (Fig 16, Item 10).

22.5 Remove the Display Board PCB (Fig 16, Item 10) and the spacers (Fig 16, Item 50).

22.6 Remove the screws (Fig 17, Item 70) and the washers (Fig 17, Item 80) and remove the Front Panel (Fig 17, Item 60).

22.7 Check the neoprene sponge cord (Fig 17, Item 90) and replace if necessary.

22.8 Push the spring clips of the Power Switch in and remove it from the Front Panel.

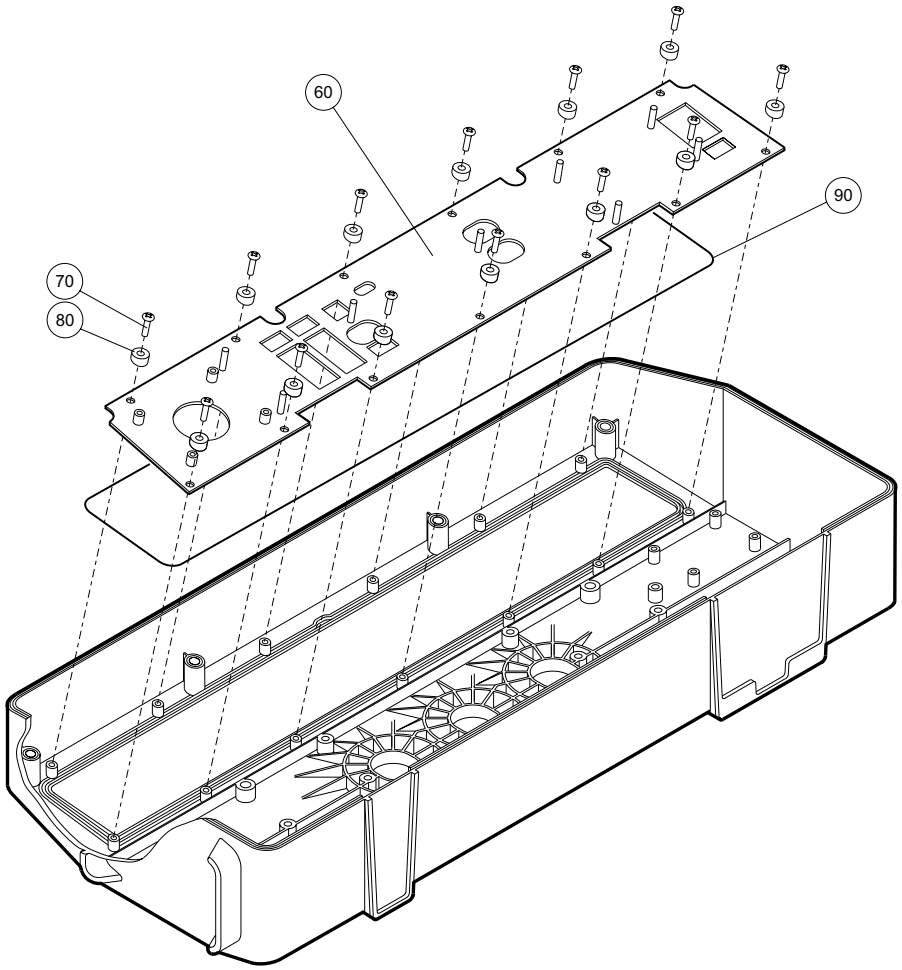


Figure 17 - Replacing the New Style Front Panel

23 Installing the New Style Display Panel PCB

23.1 Install the correct Front Panel (Fig 17, Item 60) and secure with screws and fixing caps (Fig 17, Items 70 and 80).

23.2 Install the spacers (Fig 16, Item 50) and the display board PCB (Fig 16, Item 10) onto the front panel.

23.3 Install the display PCB/front panel earth wire on to the correct stud and secure with a nut and washer (Fig 16, Items 20 and 40).

23.4 Install the remaining nuts and plastic washers (Fig 16, Items 20 and 30).

23.5 Install the Pressure Control Assembly (Refer to Page 29, Section 25).

23.6 Push the Power Switch through the Front Panel ensuring that the circle on the front of the switch is uppermost on the panel.

23.7 Refer to Fig 15and connect the wires to the display board PCB as follows:

- 1 Rotary Assembly Motor
- 2 Compressor Power Cable
- 3 Pressure Control Micro-switch -Low Pressure (LP)
- 4 Pressure Switch -High Pressure (HP)

- 5 Rotary Assembly Micro-switch (Cycle)
- 6 Compressor Power Cable
- 7 Power switch to Display Panel PCB (bottom)
- 8 Power switch to Display Panel PCB (top)
- 9 Power Supply Fuses to Power switch

23.8 Refer to Fig 15 and fit cable ties to the following groups of wires:

- Cables 1,4 & 5 - Rotary Assembly Motor, Pressure Switch -High Pressure (HP) and Rotary Assembly Micro-switch (Cycle).
- Cables 6 & 7 - Compressor Power Cable and Power switch to Display Panel PCB (bottom).
- Cable 9 - Power Supply Fuses to Power switch and the filter hose.

23.9 Assemble the rear case (Refer to Page 5, Section 5).

Table 11 - Display Board PCB & Front Panel Parts List

Item	Part Number	Description	Qty
10	151478	New Style Display Board PCB 240V (UK, EURO)	1
	151477	New Style Display Board PCB 120V (USA, Japan 50 & 60Hz)	1
20	FAS098	Nut M3 Full	8
30	FAS091	Washer M3 Nylon	7
40	FAS002	Washer 6BA Anti-Vib	1
50	151352	Spacer 8.5LG x 3.2 x 6mm	8
60	151493	Front Panel Assy (Nimbus 2) - (UK, EURO, Japan 50 & 60Hz)	1
	151494	Front Panel Assy (Nimbus 2) - (Germany)	1
	151496	Front Panel Assy (Nimbus 2) - (France)	1
	151503	Front Panel Assy (Nimbus 2) - (Italy)	1
	151498	Front Panel Assy (Nimbus 3) - (UK, EURO, Japan 50 & 60Hz)	1
	151499	Front Panel Assy (Nimbus 3) - (Germany)	1
	151500	Front Panel Assy (Nimbus 3) - (France)	1
	151501	Front Panel Assy (Nimbus 3) - (Italy)	1
	151502	Front Panel Assy (Nimbus 3) - (Netherlands)	1
	151495	Front Panel Assy (DFS 2)	1
	151497	Front Panel Assy (DFS 3)	1
70	FAS145	Screw 3 DIA 8 Pozi Pan Head PT	13
80	151309	Front Panel Fixing Cap	13
90	REF	Neoprene Sponge Cord (Dia 2 mm)	13

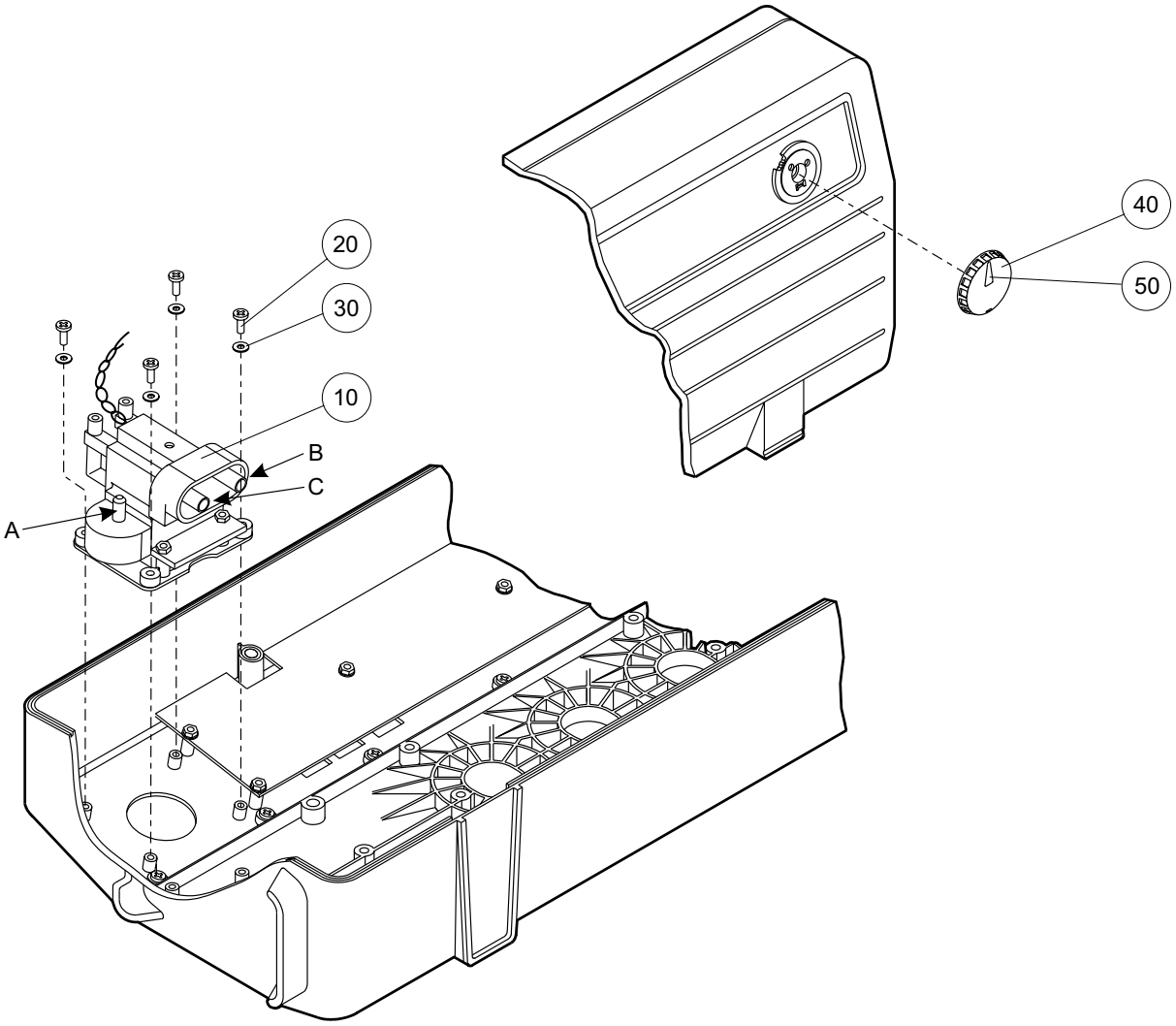


Figure 18 - Replacing The Pressure Control Assembly

Table 12 - Pressure Control Assembly Parts List

Item	Part Number	Description	Qty
10	151059	Pressure Control Assembly	1
20	FAS043	Screw M3 x 6 Pan Hd	4
30	FAS002	Washer 6BA	4
40	151305	Control Knob	1
50	151327	Control Knob Label	1

24 Removing the Pressure Control Assembly

24.1 Carefully prise the Control Knob (Fig 18, Item 40) off the front panel.

24.2 Disassemble the Rear Case (Refer to Page 5, Section 4).

24.3 Disconnect the Pressure Control Assembly cable (Fig 15, Cable 3).

24.4 Disconnect the following hoses at the Pressure Control Assembly end:

- The hose from the 5-way connector (A).
- The 2 Rotary Assembly hoses (B and C).

24.5 Remove the screws and washers (Fig 18, Items 20 and 30) and the Pressure Control Assembly (Fig 18, Item 10).

25 Installing the Pressure Control Assembly

25.1 Install the Pressure Control Assembly (Fig 18, Item 10) onto the spigots of the front panel.

25.2 Secure the Pressure Control Assembly in position with screws and washers (Fig 18, Items 20 and 30).

25.3 Connect the hose from the 5-way connector to the Pressure Control Assembly (A) and the Rotary Assembly hoses to connections B and C.

25.4 Connect the Pressure Control Assembly Cable (Fig 15, Cable 3).

25.5 Turn the comfort control on the front panel anti-clockwise to its full extent. The gap in the control will point to ‘Soft’. Align the arrow on the Control Knob (Fig 18, Item 40) with the gap and locate the guide in the hole. Push the Control knob until it clips into place.

25.6 Assemble the rear case (Refer to Page 5, Section 5).

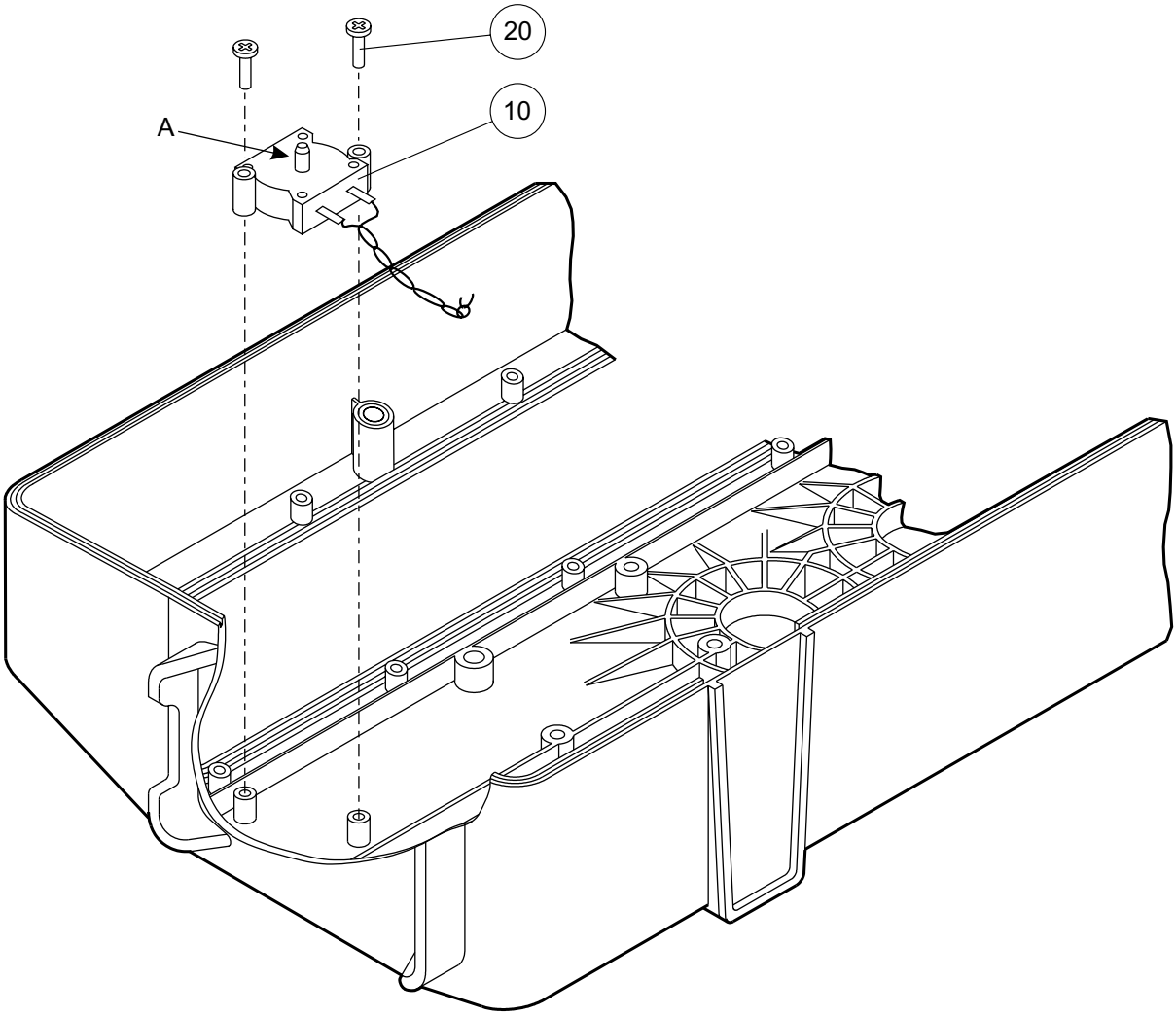


Figure 19 - Replacing the High Pressure Switch

Table 13 - High Pressure Switch Parts List

Item	Part Number	Description	Qty
10	198394	High Pressure Switch	1
20	FAS182	Screw 3 x 20 Pan Hd Pozi PT	2

26 Removing the High Pressure Switch

26.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

26.2 Disconnect the hose attached to the High Pressure Switch (A).

26.3 Cut and remove any cable ties and disconnect the High Pressure Switch cable (Fig 15, Cable 4).

26.4 Remove the screws (Fig 19, Item 20) and the High Pressure Switch (Fig 19, Item 10).

27 Installing the High Pressure Switch

27.1 Install the High Pressure Switch (Fig 19, Item 10) onto the spigots in the pump housing.

27.2 Install the screws (Fig 19, Item 20).

27.3 Connect the High Pressure Switch cable (Fig 15, Cable 4) and cable tie the following:

- Fig 15, Cables 1,4 & 5 - Rotary Assembly Motor, Pressure Switch -High Pressure (HP) and Rotary Assembly Micro-switch (Cycle).

27.4 Connect the compressor hose to the High Pressure Switch (A).

27.5 Assemble the rear case (Refer to Page 5, Section 5).

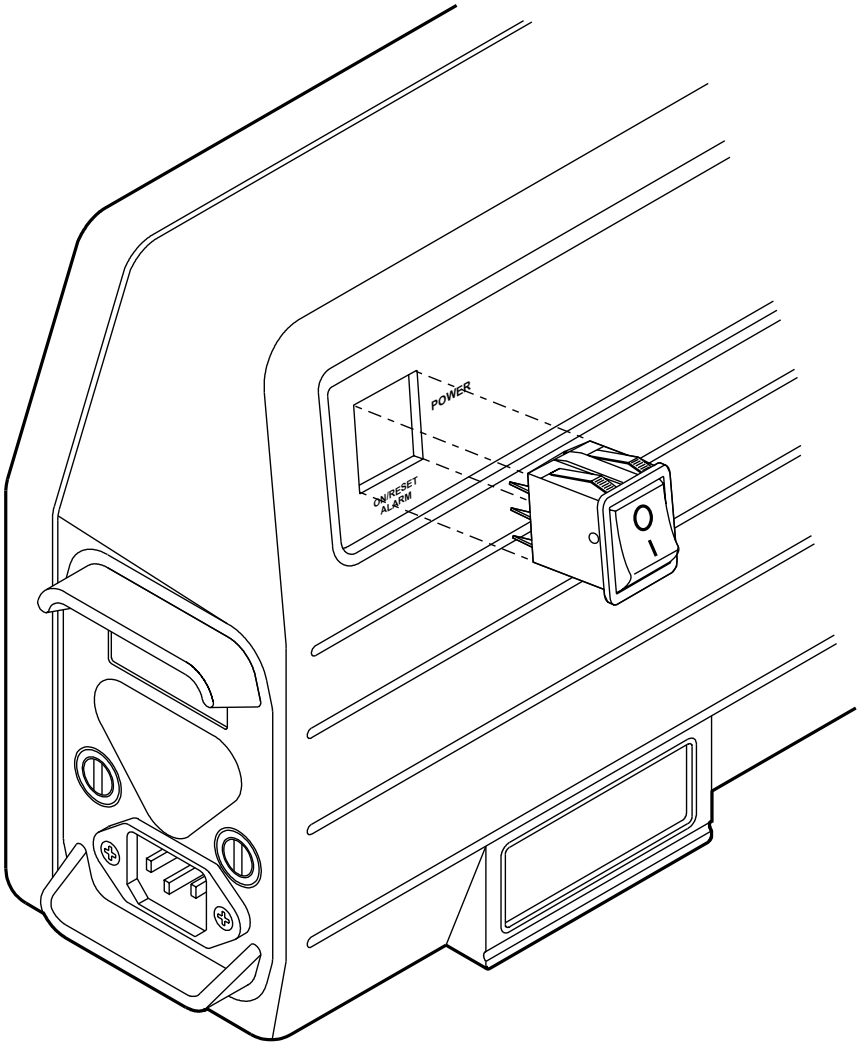


Figure 20 - Replacing the Power Switch

Table 14 - Power Switch Part List

Item	Part Number	Description	Qty
10	151353	Power Switch	1

28 Replacing the Mains/Power Switch

28.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

28.2 Disconnect the connectors from the back of the Power Switch (Refer to Fig 12, 11 or 15 - depending on the PCB fitted to the pump).

28.3 Compress the clips on the top and bottom of the switch on the inside of the pump casing and push the switch out of the front panel.

28.4 Install the new Power Switch from the front of the pump with the circle uppermost, as shown in Fig 20. Push the Switch until it clips into the front panel.

28.5 Connect the connectors to the back of the Power Switch (Refer to Fig 12, 11 or 15).

28.6 Assemble the rear case (Refer to Page 5, Section 5).

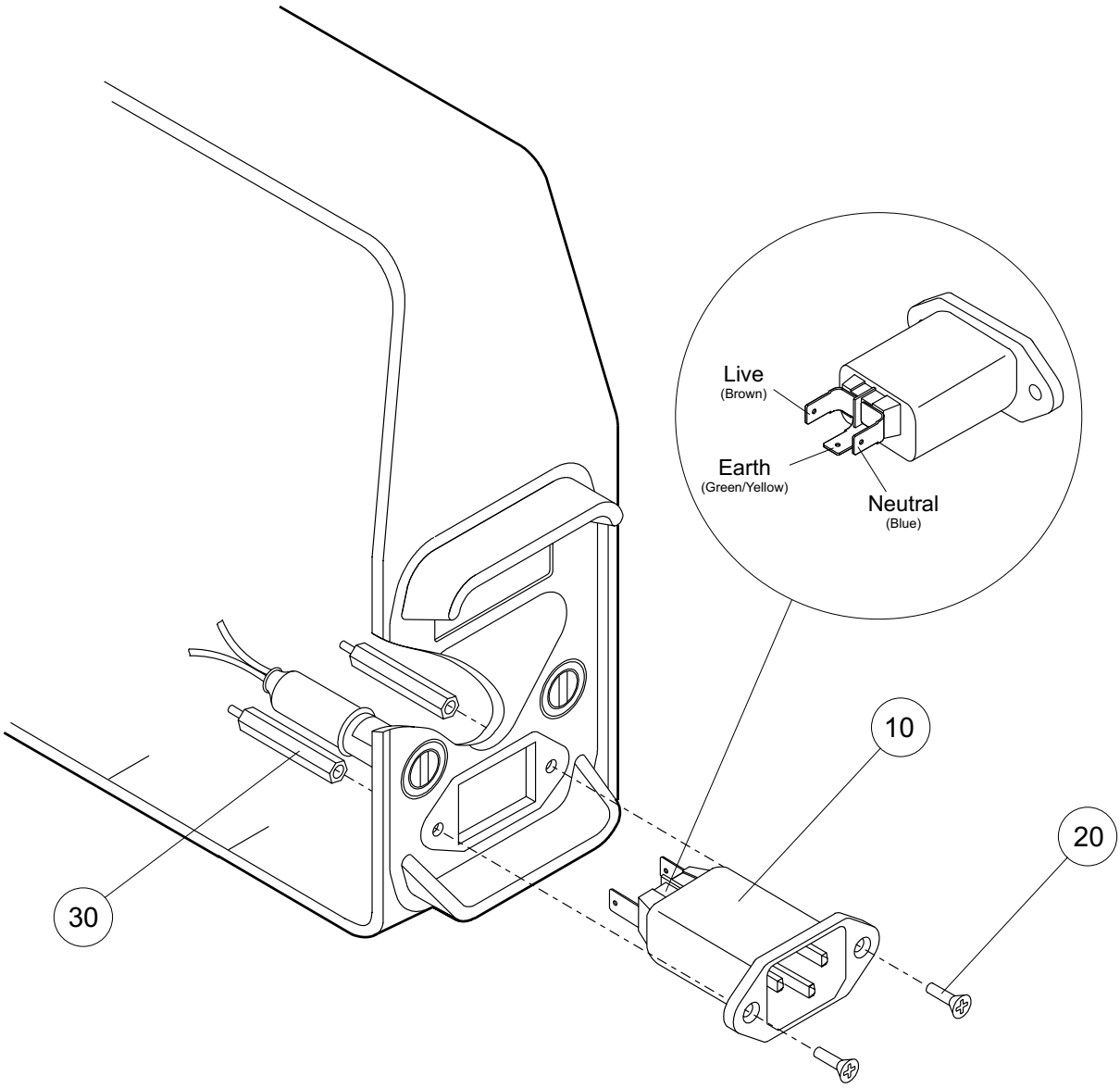


Figure 21 - Replacing the Mains/Power Inlet Socket

Table 15 - Mains/Power Inlet Socket and Cordset Parts List

Item	Part Number	Description	Qty
10	151351	Mains/Power Inlet Socket	1
20	FAS194	Screw	2
30	151348	Pillar	2
40	151337	Moulded Cordset 240v UK	1
	NMB097	Moulded Cordset 240v EURO	1

29 Replacing the Mains/Power Inlet Socket and Cordset (Moulded Cordset Versions Only)

29.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

Note : For Nimbus 3 and DFS 3 pumps, the Bio Filter can be removed to gain easier access to the Fuse Holders (Refer to Page 49, Section 41).

29.2 Disconnect the two fuses and the earth wire from the back of the Mains/Power Inlet Socket.

29.3 Remove the screws (Fig 21, Item 20), the pillars (Fig 21, Item 30) and the Mains/Power Inlet Socket (Fig 21, Item 10) from the pump casing.

29.4 Install the Mains/Power Inlet Socket (Fig 21, Item 10) into the pump casing ensuring that the 2 connectors are uppermost.

29.5 Install the screws (Fig 21, Item 20) and the pillars (Fig 21, Item 30).

29.6 Connect the two fuses and the earth wire from the back of the Mains/Power Inlet Socket.

Note : For Nimbus 3 and DFS 3 pumps if the Bio Filter has been removed, install the Bio Filter (Refer to Page 49, Section 42).

29.7 Assemble the rear case (Refer to Page 5, Section 5).

29.8 If necessary, replace the cordset.

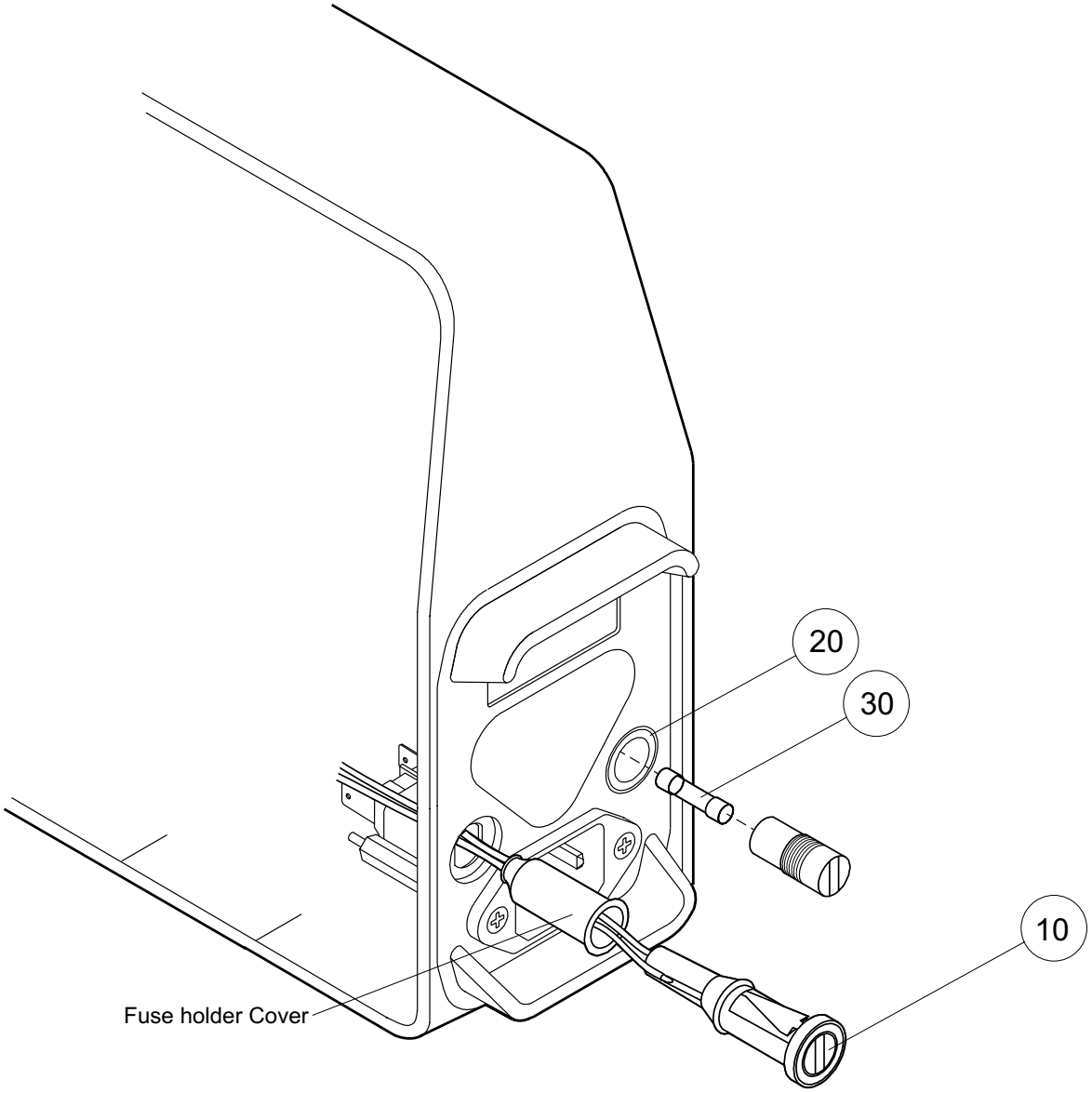


Figure 22 - Replacing the Mains/Power Inlet Fuses and the Fuse Holders

Table 16 - Mains/Power Inlet Fuses and Fuse Holders Part List

Item	Part Number	Description	Qty
10	151069	Fuse Holder - Neutral (Blue) - (Pumps with mains/power inlet socket)	1
	151118	Fuse Holder - Neutral (Blue) - (Hard wired pumps)	1
20	151070	Fuse Holder - Live (Brown) - (Pumps with mains/power inlet socket)	1
	151119	Fuse Holder - Live (Brown) - (Hard wired pumps)	1
30	CAS011	Fuse F500mA	2

30 Replacing the Mains/Power Fuses (All Versions)

30.1 Unscrew the Fuse Holder Inner and remove the Fuse (Fig 22, Item 30).

30.2 Install the Fuse (Fig 22, Item 30) into the Fuse Holder Inner and screw into the Fuse Holder.

31 Replacing the Mains/Power Inlet Fuse Holders (Moulded Cordset Versions Only)

WARNING:

BEFORE REPLACING THE MAINS/POWER FUSEHOLDERS, ENSURE THE PUMP UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

31.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

Note : For Nimbus 3 and DFS 3 pumps, the Bio Filter can be removed to gain easier access to the Fuse Holders (Refer to Page 49, Section 41).

31.2 Disconnect the 2 wires leading from the fuse holder at the Power Switch and the Mains/Power Inlet Socket. Cut and remove any cable ties, as necessary.

31.3 On the inside of the pump casing, pull the Fuse Holder Cover off of back the Fuse Holder (Fig 22, Item 10 or 20).

31.4 Clamp the triangular flaps on the Fuse Holder (Fig 22, Item 10 or 20) and ease it out of the pump casing.

31.5 Ease the Fuse Holder Cover through the hole in the pump casing and remove the Fuse Holder (Fig 22, Item 10 or 20).

31.6 Feed the wires of the new Fuse Holder through the hole in pump casing from the outside in.

31.7 Pull the cover off the back of the Fuse Holder and ease it through the hole.

31.8 Pass the back of the Fuse Holder through the hole and push the cover over the back of the Fuse Holder. Ensure the unused connector on the Fuse Holder is inside the cover.

31.9 Align the flat edges of the Fuse Holder with those of the hole in the casing and push the Fuse Holder into the hole until it clips into place.

31.10 Connect the shortest wire to the correct connector on the back of the Mains/Power Inlet Socket and the longest wire to the correct connector on the Power Switch.

Note : For Nimbus 3 and DFS 3 pumps if the Bio Filter has been removed, install the Bio Filter (Refer to Page 49, Section 42).

31.11 Cable tie the wires, as necessary.

31.12 Assemble the rear case (Refer to Page 5, Section 5).

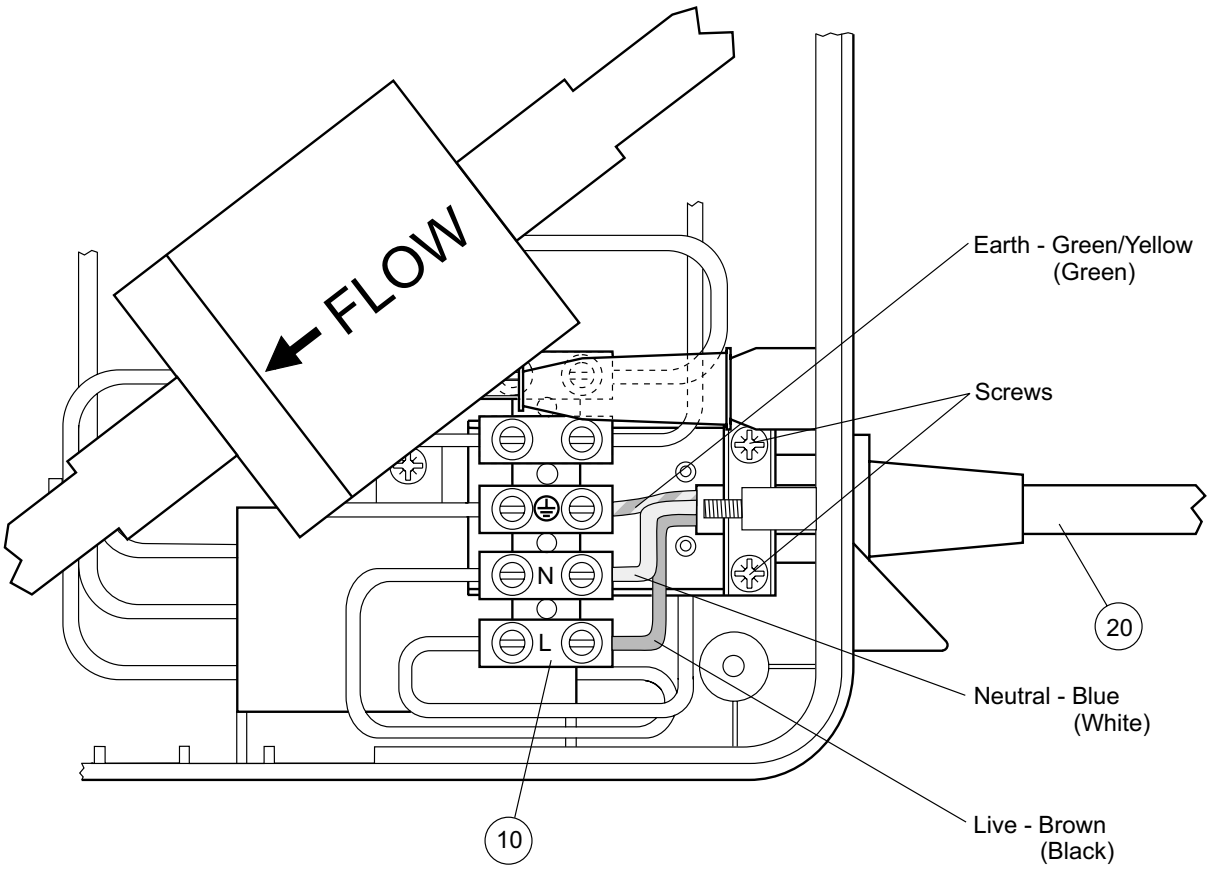


Figure 23 - Replacing the Mains/Power Cable (Hard wired versions only)

Table 17 - Mains/Power Cable (Hard wired versions only) Part List

Item	Part Number	Description	Qty
10	151406	5-Way Connector and Support	1
20	198328	Mains/Power Cable (UK)	1
	504324	Mains/Power Cable (Euro)	1
	BP300	Mains/Power Cable (USA)	1
	CAS021	Mains/Power Cable (Japan)	2

32 Removing the Mains/Power Cable (Hard wired versions only)

WARNING:

BEFORE REPLACING THE MAINS/POWER CABLE, ENSURE THE PUMP UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

32.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

32.2 Remove the 2 screws and fold back the cable clamp on the integral 5-way connector and support (Fig 23, Item 10).

32.3 On the 5-way connector (Fig 23, Item 10), loosen the 3 screws on the bottom right-side of the connector (nearest the corner of the pump case), and remove the live, neutral and earth wires of the mains/power cable (Fig 23, Item 20).

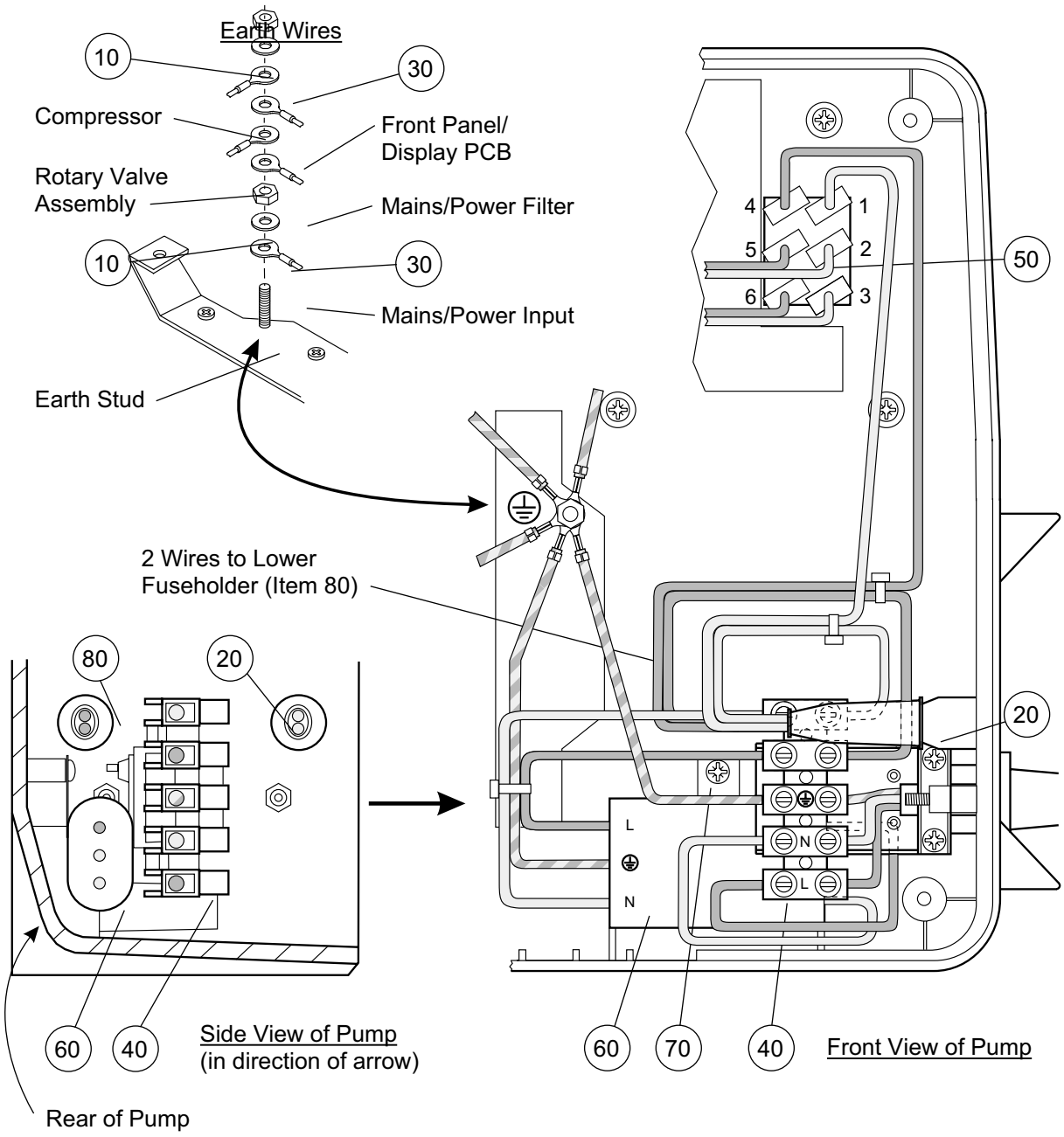
32.4 Carefully pull the end of the mains/power cable out through the side panel.

33 Installing the Mains/Power Cable (Hard wired versions only)

33.1 Pass the end of the new mains/power cable through the rubber guide in the side panel, and connect the live, neutral and earth wires to the terminals on the 5-way connector (Fig 23, Item 10) as shown. Tighten the 3 screws.

33.2 Close the cable clamp, on the integral 5-way connector and support (Fig 23, Item 10), over the insulated part of the mains/power cable, and install the 2 screws to clamp the mains/power cable in position.

33.3 Assemble the rear case (Refer to Page 5, Section 5).



5-way Connector Wiring (Item 40)

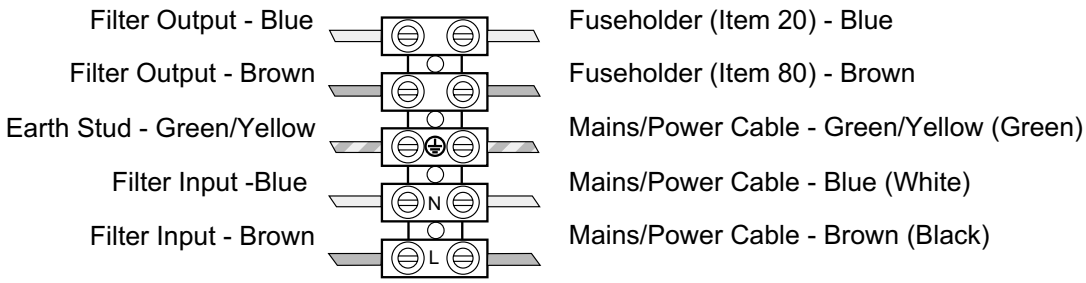


Figure 24 - Replacing the Mains/Power Fuseholders and Mains/Power Filter (Hard wired versions only)

34 Removing the Mains/Power Fuseholders (Hard wired versions only)

WARNING:

BEFORE REPLACING THE MAINS/POWER FUSEHOLDERS, ENSURE THE PUMP UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

34.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

Note : For Nimbus 3 and DFS 3 pumps, the Bio Filter can be removed to gain easier access to the Fuse Holders (Refer to Page 49, Section 41).

34.2 There are two wires connected to each fuseholder assembly (Fig 24, Item 10 or 20):

- One wire to the mains/power switch (Fig 24, Item 50).
- One wire to the right-side of the 5-way connector (Fig 24, Item 40).

34.3 Disconnect the above two wires as follows:

- Pull the connector off the mains/power switch.
- Loosen the screw on the terminal on the right-side of the 5-way connector, and remove the wire connected to the fuseholder.

34.4 Cut and remove any cable ties, as necessary.

34.5 On the inside of the pump casing, pull the fuseholder shroud off of the back of the fuseholder body (Fig 24, Item 10 or 20).

34.6 Clamp the triangular flaps on the fuseholder body and ease it out of the pump casing.

34.7 Ease the fuseholder shroud through the hole in the pump casing and remove the complete fuseholder assembly.

Table 18 - Mains/Power Fuseholders and Mains/Power Filter Parts List (Hard wired versions only)

Item	Part Number	Description	Qty
10	FAS144	Nut, M4 Full	2
20	151118	Fuseholder Assembly - Neutral (Blue)	1
30	FAS053	Washer, M4 Anti-Vibration	2
40	151406	5-Way Connector and Support	1
50	151353	Mains/Power Switch, 240V	1
60	151121	Mains/Power Filter Assembly	1
70	FAS145	Screw, 3 (dia) x 8mm Pan Head	1
80	151119	Fuseholder Assembly - Live (Brown)	1
-	BP196	Cable Tie	A/R

35 Installing the Mains/Power Fuseholders (Hard wired versons only)

35.1 Feed the wires of the new fuseholder assembly (Fig 22, Item 10 or 20) through the hole in pump casing from the outside.

35.2 Pull the fuseholder shroud off the back of the fuseholder, and ease it through the hole.

35.3 Pass the back of the fuseholder through the hole. Align the flat edges of the fuseholder with those of the hole in the casing, and push the fuseholder into the hole until it clips into place.

35.4 Holding the front of the fuseholder against the case, slide the fuseholder shroud over the back of the fuseholder.

Note: Make sure that the unused connector on the fuseholder is completely covered by the fuseholder shroud.

35.5 Connect the fuseholder wire with the bare end to the correct terminal on the right-side of the 5-way connector (Fig 24, Item 40), and tighten the screw.

35.6 Push the connector on the end of the other fuseholder wire onto the correct terminal on the mains/power switch (Fig 24, Item 50).

35.7 Cable tie the wires, as necessary.

Note : For Nimbus 3 and DFS 3 pumps if the Bio Filter has been removed, install the Bio Filter (Refer to Page 49, Section 42).

35.8 Assemble the rear case (Refer to Page 5, Section 5).

35.9 Check that the correct fuse has been installed in the fuseholder (Refer to Page 37, Section 30).

36 Removing the Mains/Power Filter (Hard wired versons only)

WARNING:

BEFORE REPLACING THE MAINS/POWER FILTER, ENSURE THE PUMP UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

36.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

Note : For Nimbus 3 and DFS 3 pumps, the Bio Filter can be removed to gain easier access to the Fuse Holders (Refer to Page 49, Section 41).

36.2 Remove the top nut (Fig 24, Item 10) and washer (Fig 24, Item 30) from the earth stud on the right compressor mounting bracket.

36.3 Remove the earth wire tag which is connected to the mains/power filter from the earth stud. Leave the remaining earth wire tags on the earth stud.

36.4 Loosen the 2 screws on the top left-side and the 2 screws on the bottom left-side of the 5-way connector (Fig 24, Item 40), and remove the 4 wires.

36.5 Cut and remove any cable ties, as necessary.

36.6 Remove the screw (Fig 24, Item 70) and the mains/power filter (Fig 24, Item 60) from the casing.

37 Installing the Mains/Power Filter (Hard wired versions only)

37.1 Place the new mains/power filter (Fig 24, Item 60) in position in the casing, and install the screw (Fig 24, Item 70) to secure it.

Note: Make sure that the 5 wires from the mains/power filter are routed correctly, and are not trapped beneath the filter. The ends of the wires should be accessible, and not obscured beneath the 5-way connector (Fig 24, Item 40).

37.2 Refer to Figure 24 and Table 19, and connect up the 5 wires on the mains/power filter.

Note: The side of the filter with 2 wires (brown and blue) is the "input", and the side with 3 wires (brown, green/yellow and blue) is the "output".

Note: In Table 19, "Terminal 1" is at the bottom of the 5-way connector (nearest the bottom wall of the casing).

37.2.1 Tighten the screws in the 5-way connector (Fig 24, Item 40) to secure the wires.

37.2.2 Install the earth wire tag from the mains/power filter onto the earth stud on the right compressor mounting bracket. Make sure the other earth wire tags are still on the earth stud (Refer to Figure 24). Then install the top washer (Fig 24, Item 30) and nut (Fig 24, Item 10), and tighten.

37.3 Cable tie the wires, as necessary.

37.4 Install the bio filter (Refer to Page 49, Section 42)

37.5 Assemble the rear case (Refer to Page 5, Section 5).

Table 19 - Mains/Power Filter Connections (Hard wired versions only)

Mains/Power Filter	5-Way Connector	Other
Input - Brown Wire	Terminal 1 - Left-Side	-
Input - Blue Wire	Terminal 2 - Left-Side	-
Output - Brown Wire	Terminal 4 - Left-Side	-
Output - Blue Wire	Terminal 5 - Left-Side	-
Output - Green/Yellow Wire	-	Earth Stud on Right Compressor Mounting Bracket

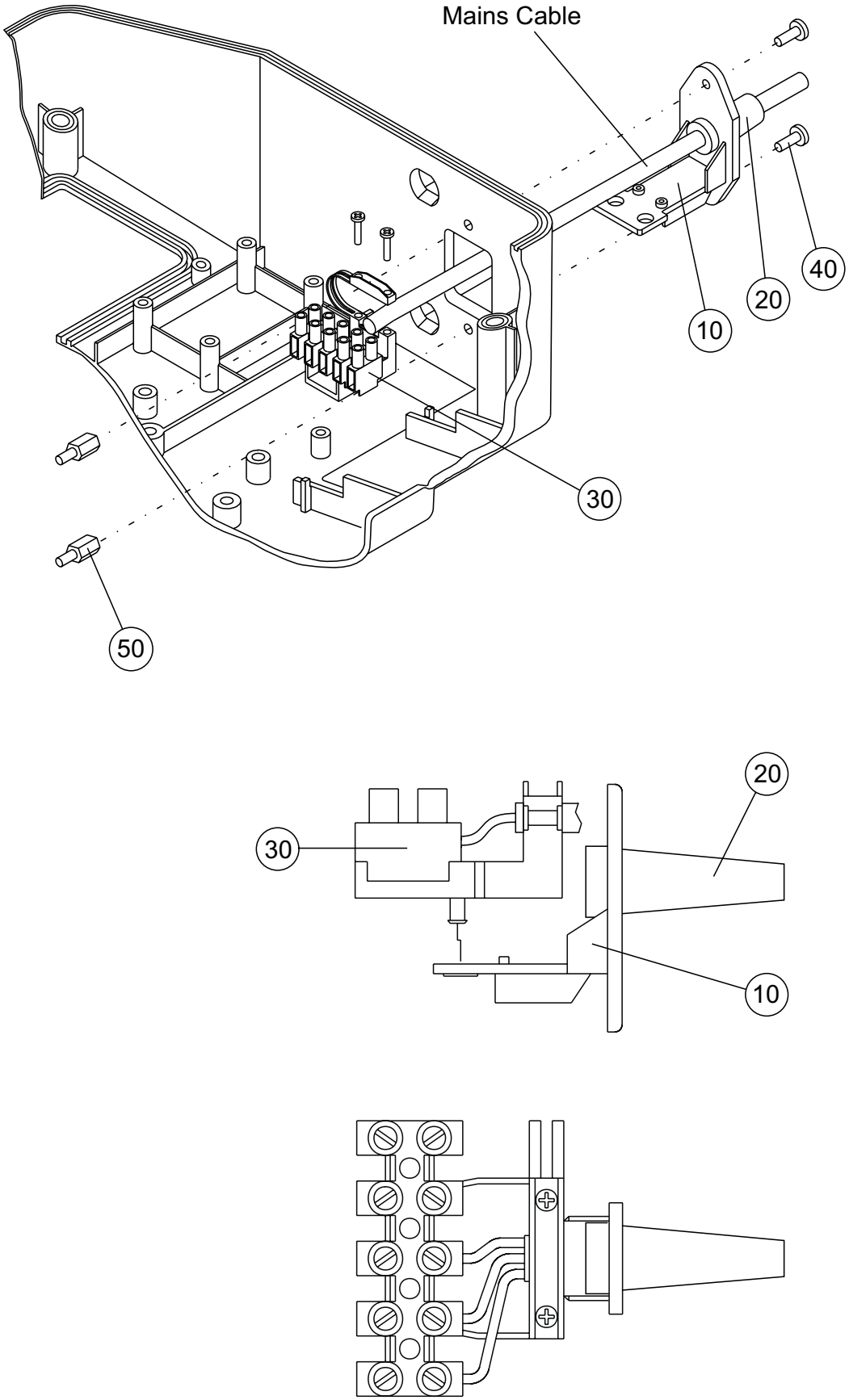


Figure 25 - Replacing the 5-Way Connector and Support (Hard wired versions only)

38 Removing the 5-Way Connector and Support (Hard wired versions only)

WARNING:

BEFORE REPLACING THE 5-WAY CONNECTOR AND SUPPORT, ENSURE THE PUMP UNIT HAS BEEN ISOLATED FROM THE MAINS/POWER SUPPLY BY REMOVING THE MAINS/POWER PLUG FROM THE WALL SOCKET.

38.1 Remove the mains/power fuseholders (Refer to Page 41, Section 34).

38.2 Remove the mains/power cable (Refer to Page 39, Section 32).

38.3 Remove the mains/power filter (Refer to Page 42, Section 36).

38.4 Carefully separate and remove the 5-way connector and support (Fig 25, Item 30) from the cable converter (Fig 25, Item 10).

38.5 Remove the screws (Fig 25, Item 40) and pillars (Fig 25, Item 50), and remove the cable converter (Fig 25, Item 10) and grommet (Fig 25, Item 20).

39 Installing the 5-Way Connector and Support (Hard wired versions only)

39.1 Make sure that the grommet (Fig 25, Item 20) is installed in the cable converter (Fig 25, Item 10).

39.2 Install the cable converter and grommet into the pump casing from the outside, and install the screws (Fig 25, Item 40) and pillars (Fig 25, Item 50) to secure them.

39.3 Snap the 5-way connector and support (Fig 25, Item 30) onto the cable converter (Fig 25, Item 10).

39.4 Install the mains/power filter (Refer to Page 43, Section 37).

39.5 Install the mains/power cable (Refer to Page 39, Section 33).

39.6 Install the mains/power fuseholders (Refer to Page 42, Section 35).

Table 20 - 5-way Connector and Support Parts List (Hard wired versions only)

Item	Part Number	Description	Qty
10	198312	Cable Converter	1
20	198311	Grommet	1
30	151406	5-Way Connector and Support	1
40	FAS194	Screw, M3 x 12mm Csk Head	2
50	252317	Pillar, M3 x 11mm	2

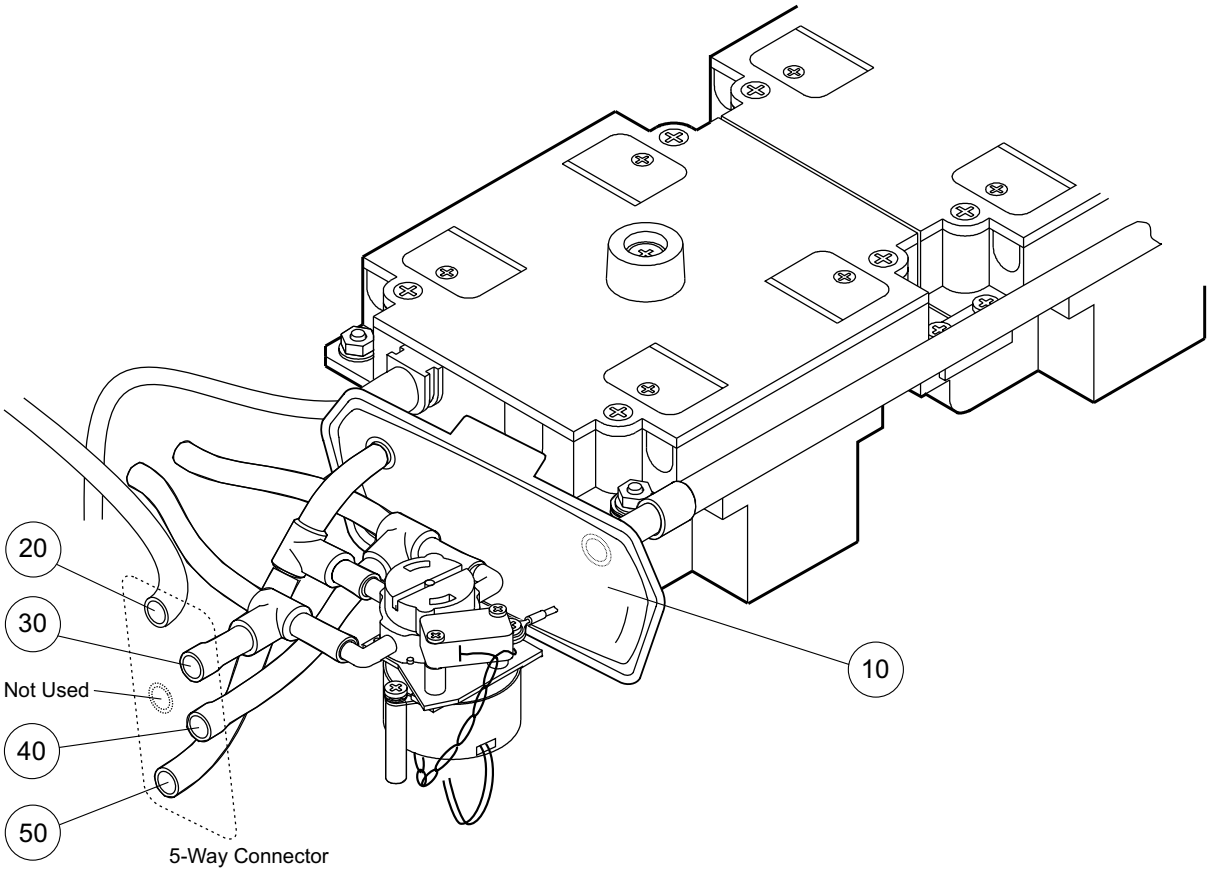


Figure 26 - Replacing the Silencer Bag (5-Way Connector Configuration)

Table 21 - Silencer Bag and 5-Way Connector Tube Parts List

Item	Part Number	Description	Qty
10	151098	Silencer Bag	1
20	151090	Pressure Control Assembly Tube	1
30	151101	Rotary Valve - Pressure Control Assembly - Left (Nimbus 2, DFS 2)	1
	151130	Rotary Valve - Pressure Control Assembly - Left (Nimbus 3, DFS 3)	1
40	151345	Rotary Valve - Pressure Control Assembly - Right (Nimbus 2, DFS 2)	1
	151129	Rotary Valve - Pressure Control Assembly - Right (Nimbus 3, DFS 3)	1
50	151346	Silencer Bag - 5-Way Connector - Rotary Valve (Nimbus 2, DFS 2)	1
	151131	Silencer Bag - 5-Way Connector - Rotary Valve (Nimbus 3, DFS 3)	1

40 Replacing the Silencer Bag

40.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

40.2 Disconnect and remove the Silencer bag (Fig 26, Item 10) from the Rotary Valve Hose (Fig 26, Item 50) and the Compressor Hose.

40.3 Install the new Silencer bag (Fig 26, Item 10) from the Rotary Valve Hose (Fig 26, Item 50) and the Compressor Hose. Ensure the Silencer Bag is pushed fully into each hose.

40.4 Assemble the rear case (Refer to Page 5, Section 5).

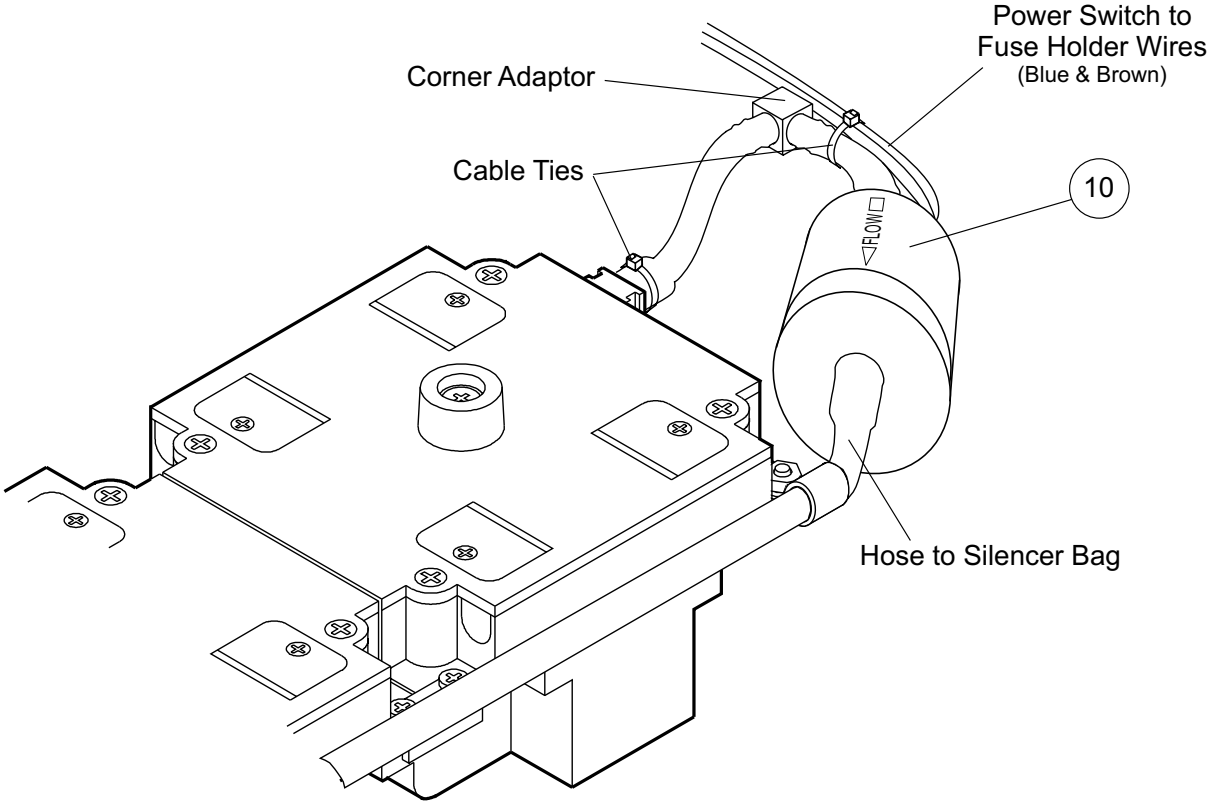


Figure 27 - Replacing the Bio Filter (Nimbus 3 and DFS 3 Pumps Only)

Table 22 - Bio Filter Part List

Item	Part Number	Description	Qty
10	151450	Bio Filter	1
20	151444	Bio Filter Label	1
30	SW393	Silicone tube, Blue ID 6mm, OD 10mm	A/R
-	BP196	Cable Tie	A/R

41 Removing the Bio Filter (Nimbus 3 and DFS 3 Pumps Only)

41.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

41.2 If it is necessary to replace the Bio Filter hoses as well as the Bio Filter, then cut and remove the cable ties as shown in Fig 27.

41.3 Ease the hoses off and remove the Bio Filter (Fig 27, Item 10). If necessary remove the hoses and the corner adaptor.

42 Installing the Bio Filter (Nimbus 3 and DFS 3 Pumps Only)

42.1 If the hoses are being replaced then cut new lengths of hose using the old hoses as a template.

42.2 Push the new Bio Filter (Fig 27, Item 10) onto the hose which leads to the Silencer Bag. Ensure the flow indicator on the Bio Filter is uppermost and points towards the Silencer Bag hose.

42.3 Install the remaining hoses and corner adaptor to the Bio Filter and the Compressor.

42.4 Cable tie the hose connection to the Compressor.

42.5 Cable tie the Bio Filter hose to the Power Switch to Fuse Holder Wires.

42.6 Assemble the rear case (Refer to Page 5, Section 5).

42.7 Fit a new Bio Filter Label to the rear case of the pump.

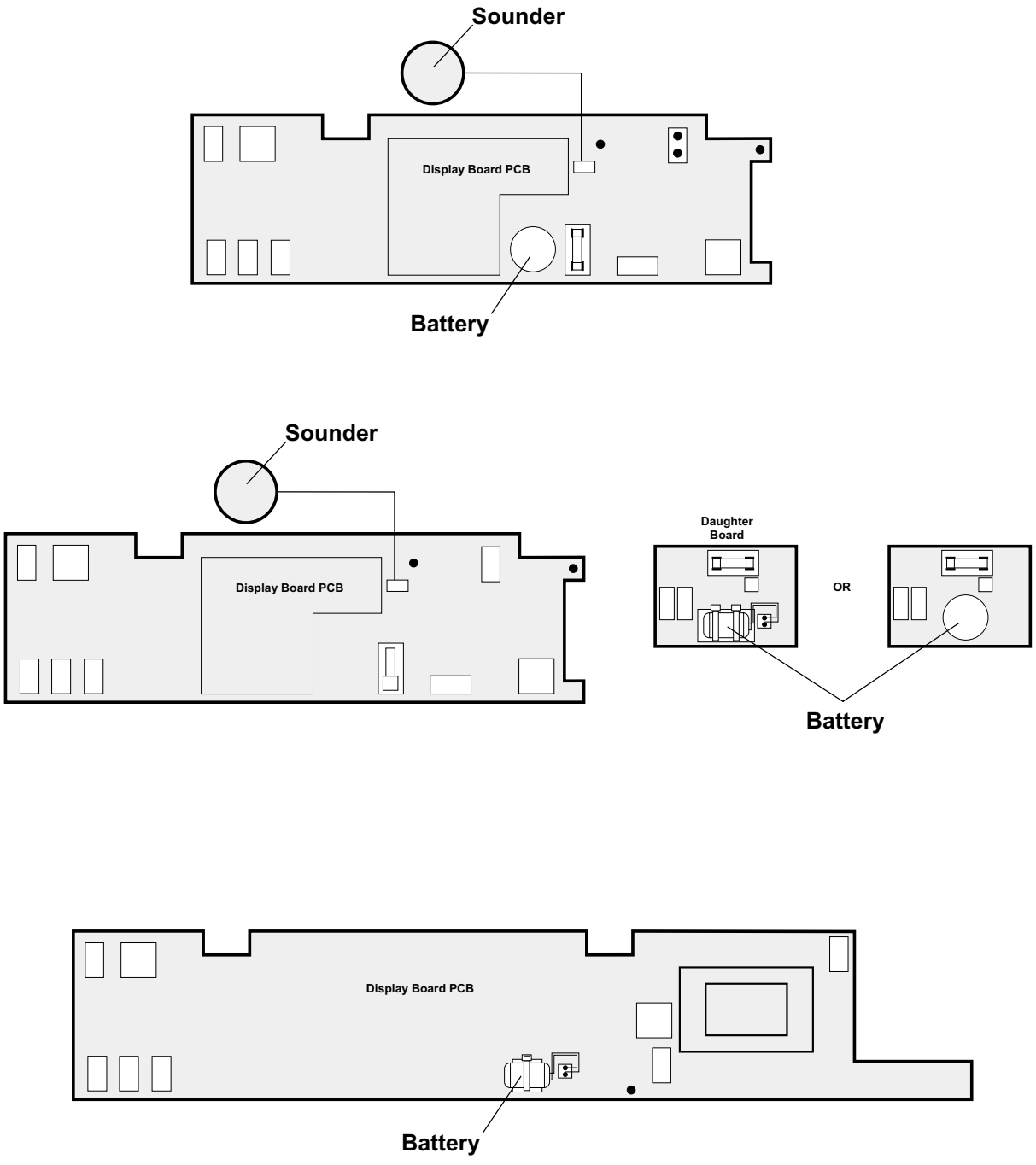


Figure 28 - Changing the Battery and replacing the Sounder

Table 23 - Battery and Sounder Parts List

Item	Part Number	Description	Qty
10	151457	Battery	1
20	151071	Sounder	1

43 Changing the Battery

43.1 There are four configurations of battery in Nimbus and DFS pumps. These are as follows:

43.1.1 A soldered round battery on the display board PCB (Early Nimbus 2 and DFS 2 pumps only).

43.1.2 A soldered round battery on the daughter board (Modified Nimbus 2 and DFS 2 pumps only).

43.1.3 A cylindrical battery connected to the daughter board (Nimbus 2, DFS 2 and Early Nimbus 3 and DFS 3 pumps).

43.1.4 A cylindrical battery connected to the display board PCB (Nimbus 3, DFS 3, modified Nimbus 2 and DFS 2 pumps).

43.2 If the pump is fitted with a soldered round battery, this cannot be replaced. In this case the pump must be updated to have a new style display board PCB fitted (Refer to Page 21, Section 20).

43.3 If the pump is fitted with cylindrical battery either on the daughter board or the display board PCB then replace it as follows:

43.3.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

43.3.2 Disconnect the battery cable from the daughter board or the display board PCB.

43.3.3 Cut and remove the cable tie(s) and remove the battery.

43.3.4 Cable tie the new battery into position and connect the battery cable to the daughter board or the display board PCB.

Note : Two cable ties are used to hold the battery if it is fitted on the daughter board but only one is used on the display board PCB.

43.4 Assemble the rear case (Refer to Page 5, Section 5).

44 Replacing the Sounder

44.1 Nimbus 2, DFS 2 and early Nimbus 3 and DFS 3 pumps, with the old style display board PCB fitted, have a Sounder connected to the display board PCB which is stuck to the inside of the pump casing. This can be replaced as follows:

44.1.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

44.1.2 Disconnect the Sounder cable from the display board PCB. The Sounder can be removed from the inside of the case by flexing the case.

44.1.3 Stick the new Sounder on the inside of the case and connect the cable to the display board PCB. If the old Sounder cannot be removed, cut the cable and mount the new Sounder on the inside of the case next to the old one.

44.1.4 Assemble the rear case (Refer to Page 5, Section 5).

44.2 Nimbus and DFS pumps fitted with the new style display board PCB do not have a separate Sounder. If the Sounder needs to be replaced then the display board must be replaced (Refer to Page 21, Section 20).

45 Replacing the Pump Case

45.1 Remove the Pump Case as follows:

45.1.1 Disassemble the Rear Case (Refer to Page 5, Section 4).

45.1.2 Disassemble the Pump Filter (Refer to Page 7, Section 6).

45.1.3 Remove the Double Compressor Assembly (Refer to Page 9, Section 8).

45.1.4 Remove the Manifold Assembly (Refer to Page 12, Section 10).

45.1.5 Remove the Rotary Valve Assembly (Refer to Page 18, Section 18) and the Silencer Bag (Refer to Page 47, Section 40).

45.1.6 Remove the Display Panel and Circuit Board(s) (Refer to Page 21, Section 20), the Pressure Control assembly can remain on the display panel.

45.1.7 Remove the High Pressure Switch (Refer to Page 31, Section 26).

45.1.8 Remove the Mains/Power Inlet Socket (Refer to Page 35, Section 29).

45.1.9 Remove the Fuse Holders (Refer to Page 37, Section 31).

45.2 Install the pump case as follows:

45.2.1 Install the Display Panel and Circuit Board(s) (Refer to Page 21, Section 20), together with the Pressure Control Assembly.

45.2.2 Install the High Pressure Switch (Refer to Page 31, Section 27).

45.2.3 Install the Double Compressor Assembly (Refer to Page 9, Section 9).

45.2.4 Install the Rotary Valve Assembly (Refer to Page19, Section 19) and the Silencer Bag (Refer to Page 47, Section 40).

45.2.5 Install the Manifold Assembly (Refer to Page 12, Section 11).

45.2.6 Install the Mains/Power Inlet Socket (Refer to Page 35, Section 29).

45.2.7 Install the Fuse Holders (Refer to Page 37, Section 31).

45.2.8 Ensure all the hoses and electrical connections have been reconnected correctly.

45.2.9 Assemble the Rear Case (Refer to Page 5, Section 5).

46 Pump Label Sets

The following table gives the part numbers for the pump label sets:

Table 24 - Pump Label Sets

Item	Part Number	Description	Qty
10	151382	Label Set Nimbus 2 (UK, EURO)	1
	151397	Label Set Nimbus 2 (Germany)	1
	151394	Label Set Nimbus 2 (France)	1
	151416	Label Set Nimbus 2 (Italy)	1
	151419	Label Set Nimbus 2 (Japan 50 Hz)	1
	151410	Label Set Nimbus 2 (Japan 60Hz)	1
	151374	Label Set DFS 2 (USA)	1
	151443	Label Set Nimbus 3 (UK)	1
	151459	Label Set Nimbus 3 (Germany)	1
	151452	Label Set Nimbus 3 (France)	1
	151463	Label Set Nimbus 3 (Italy)	1
	151461	Label Set Nimbus 3 (Netherlands)	1
	151470	Label Set Nimbus 3 (EURO)	1
	151467	Label Set Nimbus 3 (Japan 50Hz)	1
	151466	Label Set Nimbus 3 (Japan 60Hz)	1
	151468	Label Set DFS 3 (USA)	1

CHAPTER 4

MATTRESS REPAIR

1 General

This chapter details repair procedures for the standard and narrow Nimbus and DFS mattresses. All repairs should be carried out by Huntleigh approved service personnel.

After carrying out a service or any repairs, the mattress must be tested for serviceability. Carry out an inflation test on the mattress in accordance with Chapter 6, Page 15, Section 9.

The Mattress parts list can be found on page 20. The parts list for the CPR Unit can be found on page 27.

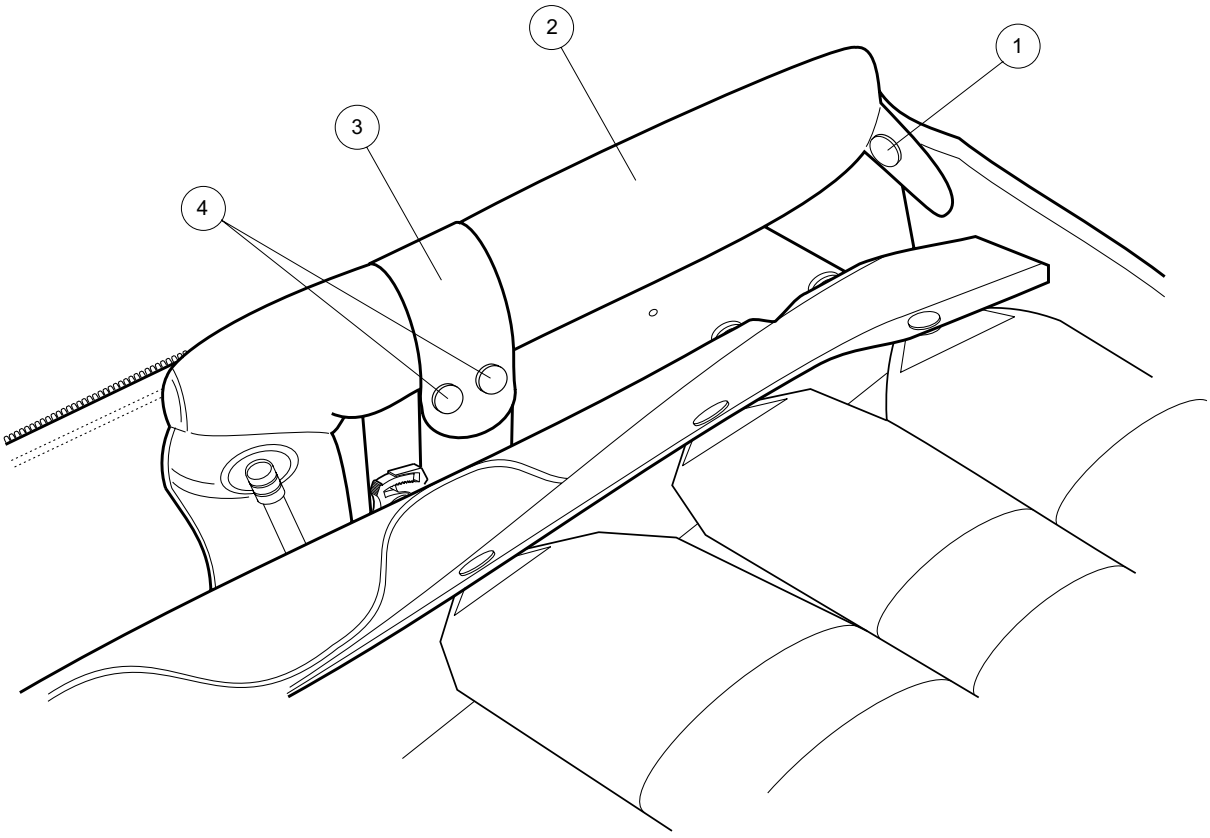


Figure 29 - Disconnect the Heel Protector

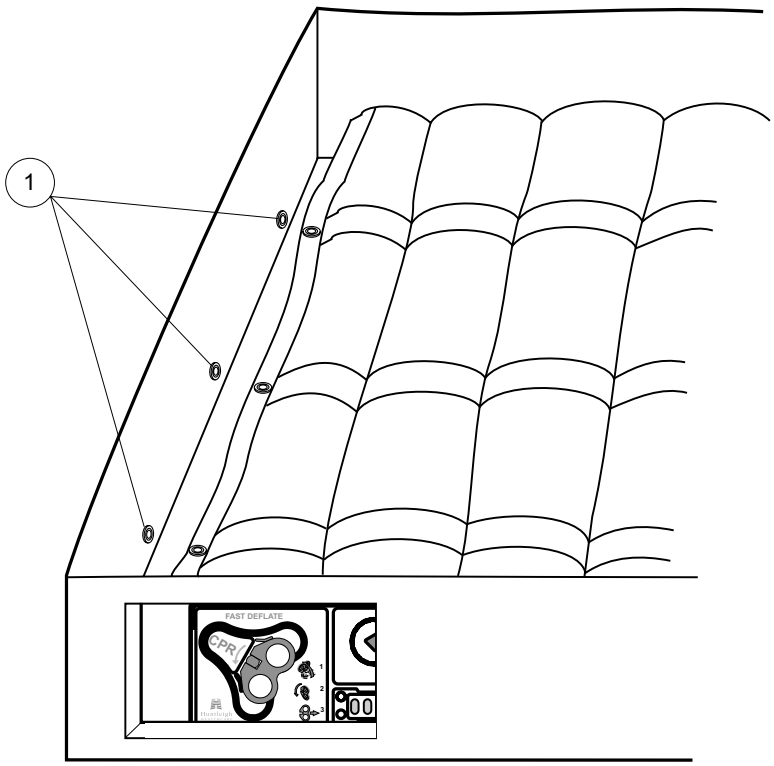


Figure 30 - Disconnect the 3 pop studs at the foot end of the mattress

2 Removing the Top Cover

2.1 Undo the two zips down the long sides of the top cover and pull the velcro end flaps off of the base cover.

3 Installing the Top Cover

3.1 Position the top cover over the mattress with the feet logo uppermost and at the foot end of the bed.

3.2 Secure the two zips down the long sides of the mattress and mate the velcro end flaps to the base of the mattress.

Note : Nimbus 2/DFS 2 and Nimbus 3/DFS 3 top cover zips differ and are not interchangeable.

4 Removing the Base Cover

4.1 Remove the top cover (Refer to Page 3, Section 2).

4.2 Unclip the pop stud (Fig 29, Item 1) from the heel protector (Fig 29, Item 2) at the foot end of the bed.

4.3 Pull the heel protector (Fig 29, Item 2) out of the loop (Fig 29, Item 3) and unclip the two pop studs (Fig 29, Item 4).

4.4 Push the transport knob end of the CPR unit out of the base cover and then remove the CPR unit from the two corner pockets.

4.5 Disconnect the three pop studs (Fig 30, Item 1) which connect the cell loop sheet to the base cover at the foot end of the bed.

Note : Nimbus 2/DFS 2 loop sheets have 6 pop studs connecting both ends of the base cover.

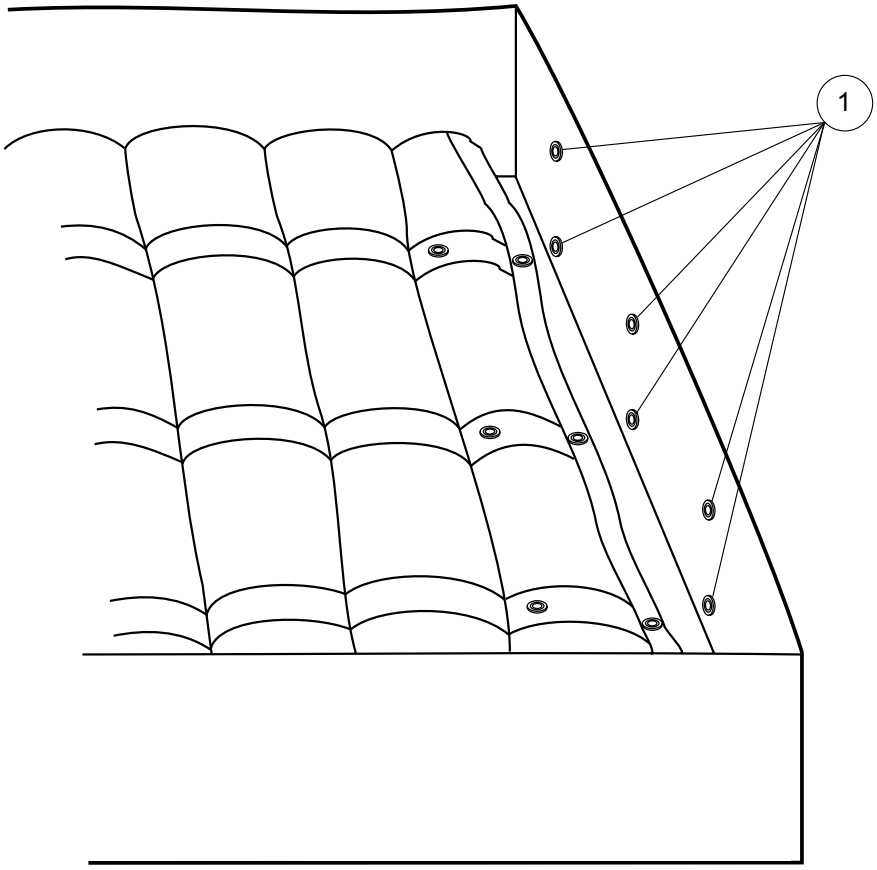


Figure 31 - Disconnect the 6 pop studs at the head end of the mattress

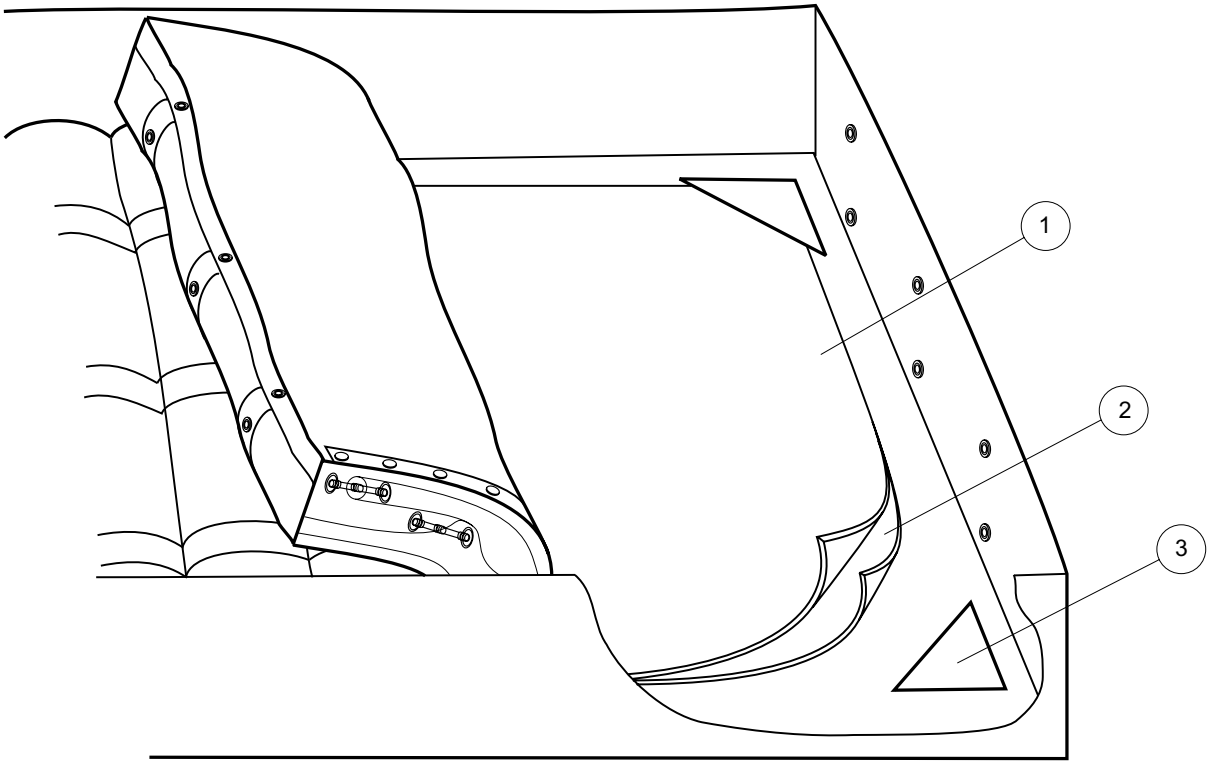


Figure 32 - Remove the soft and hard foam sheets from the pockets of the base cover

4.6 Disconnect the six pop studs (Fig 31, Item 1) which connect the cell loop sheet to the base cover at the head end of the bed.

4.7 Fold the mattress cell assembly back at the foot end of the bed and disconnect the sensor pad hoses (Fig 36, Item 1). Remove the soft foam sheet (Fig 32, Item 1) and the large hard foam sheet (Fig 32, Item 2) from the corner pockets (Fig 32, Item 3) in the base cover.

4.8 Fold the mattress cell assembly back at the head end of the bed and remove the soft foam sheet (Fig 32, Item 1) and the large hard foam sheet (Fig 32, Item 2) from the corner pockets (Fig 32, Item 3) in the base cover.

4.9 Lift the two foam sheets (Fig 32, Items 1 and 2) and the complete cell assembly out of the base cover.

4.10 Remove the small hard foam sheet from the base cover.

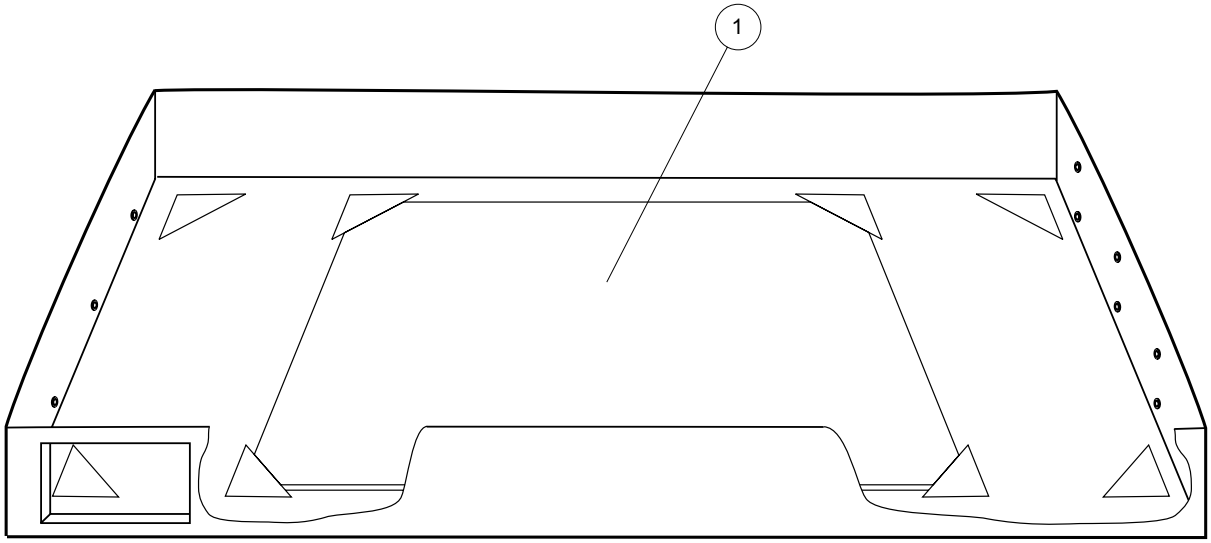


Figure 33 - Small hard foam sheet in position

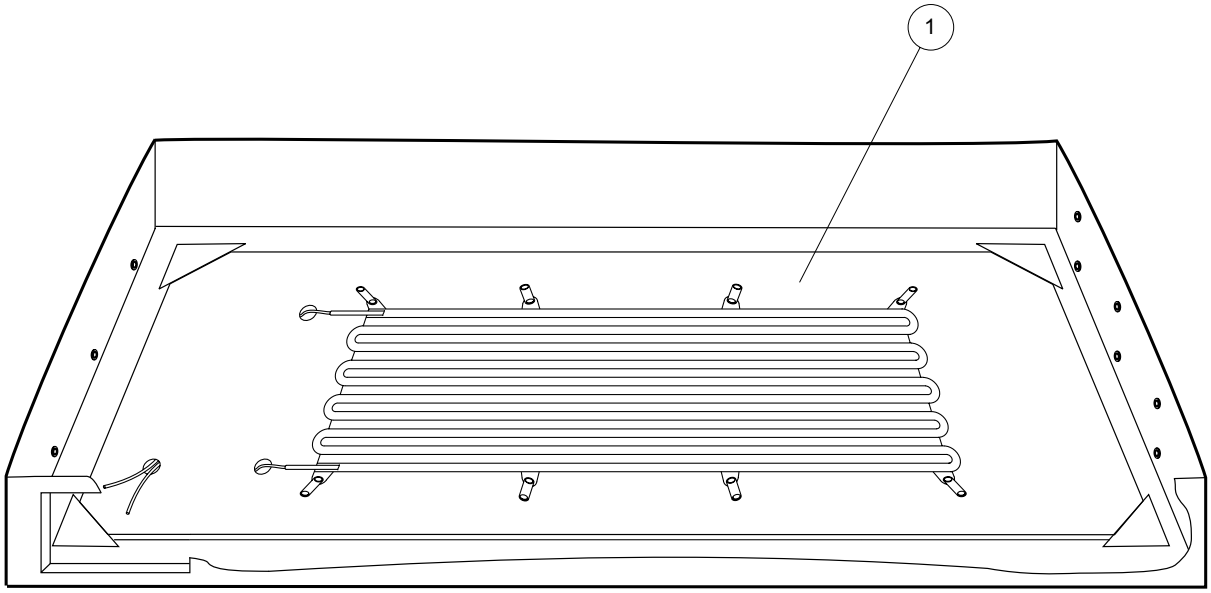


Figure 34 - Large hard foam sheet in position together with the sensor pad

5 Installing the Base Cover

5.1 Install the small hard foam sheet (Fig 33, Item 1) into the pockets in the centre of the base cover.

5.2 Install the large hard foam sheet (Fig 34, Item 1) into the pockets at each end of the base cover, with the sensor pad uppermost and sensor pad hoses towards the foot end of the base cover.

5.3 Position the soft foam sheet (Fig 35, Item 1) over the sensor pad. Pass the sensor pad hoses through the hole in the soft foam. Tuck each corner of the soft foam into the pockets at each end of the base cover.

5.4 Position the cell assembly over the soft foam sheet with the CPR unit at the foot end of the bed, adjacent to the hole in the base cover.

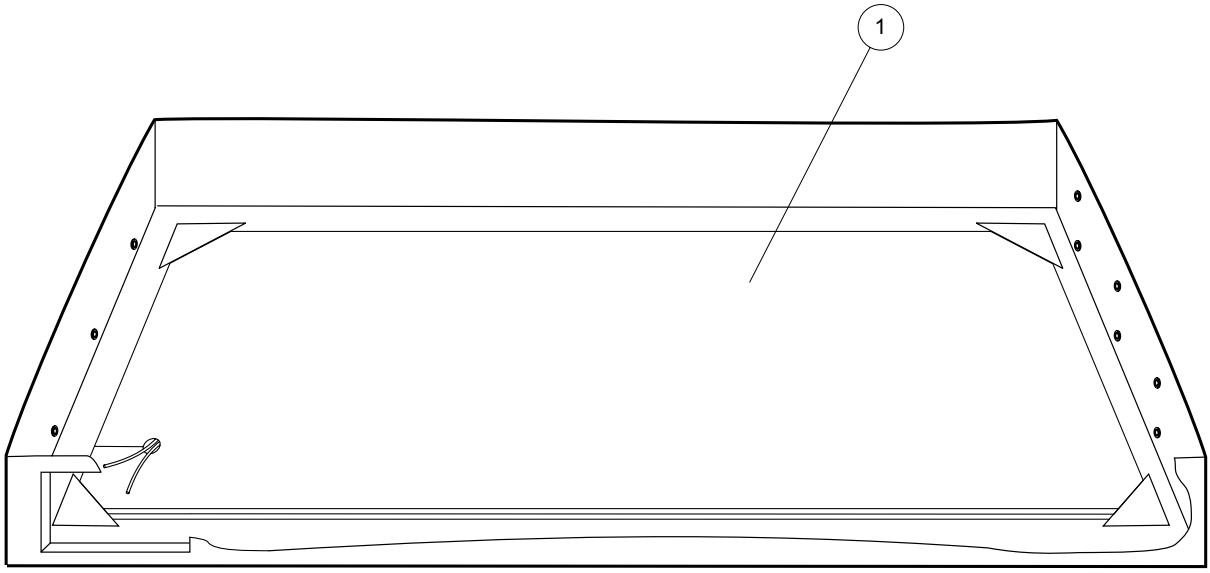


Figure 35 - Large soft foam sheet in position

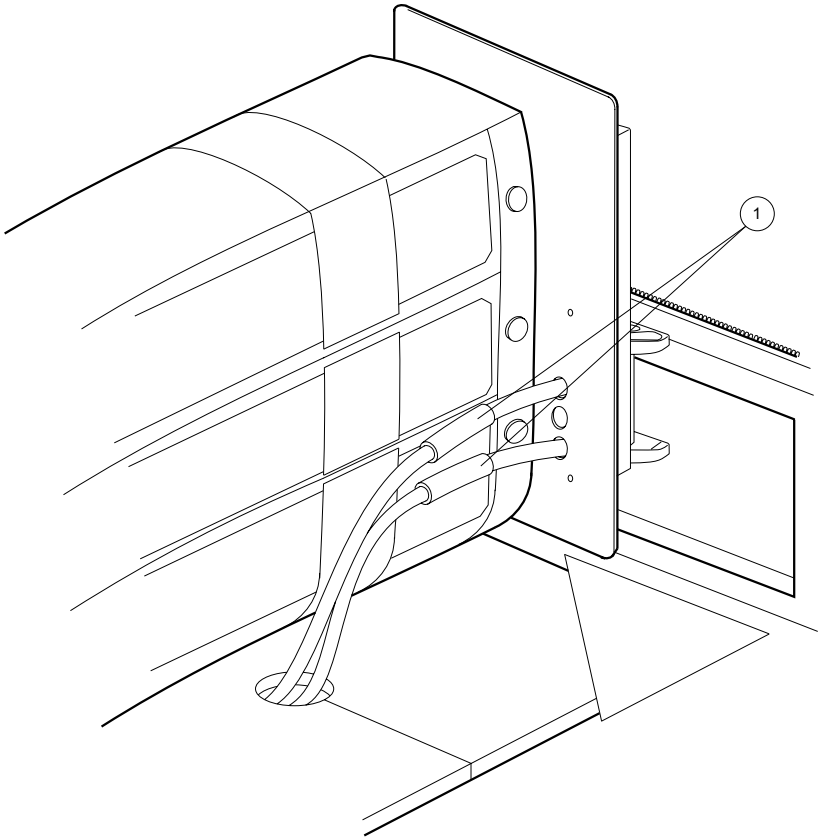


Figure 36 - Connecting the Sensor Pad Hoses to the CPR Unit

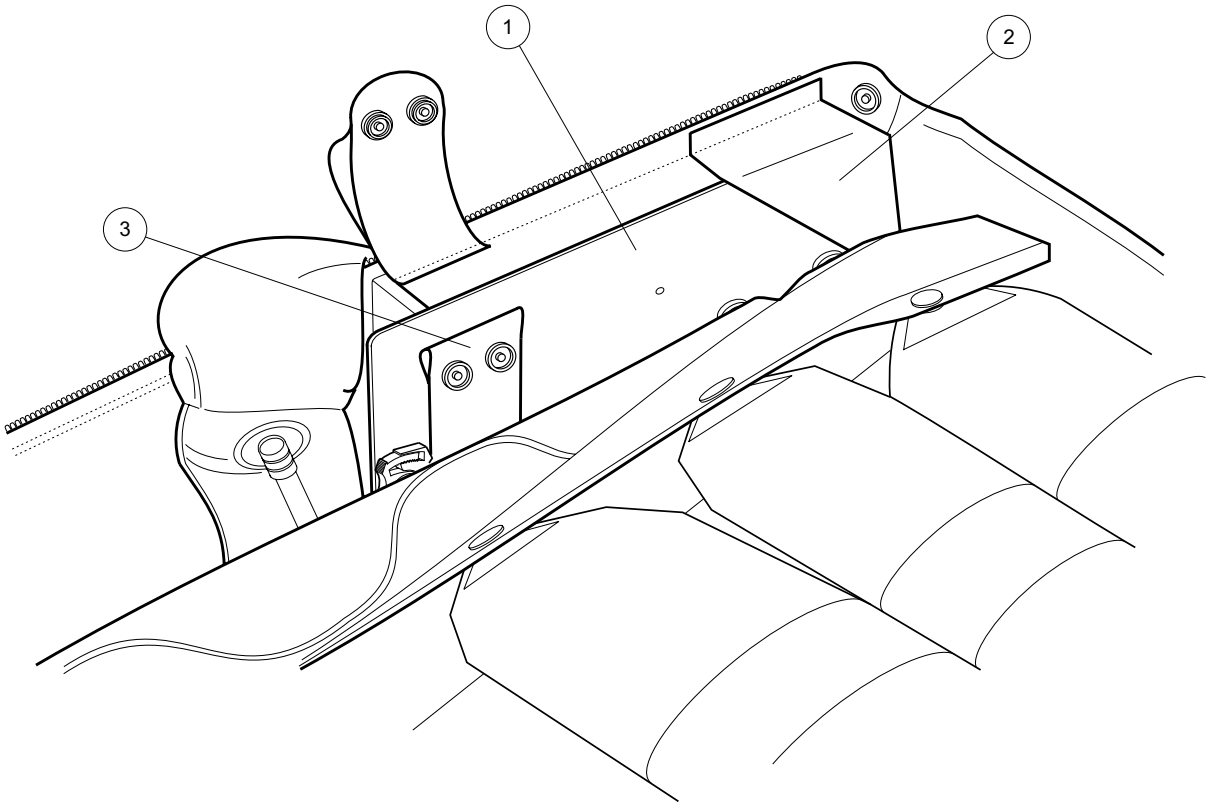


Figure 37 - Fitting the CPR Unit in the Base Cover Pocket

5.5 Fold back the cell assembly at the foot end of the bed to reveal the sensor pad hoses (Fig 36, Item 1). Connect the sensor pad hoses to the hoses on the back of the CPR unit.

Note : The sensor pad hoses for Nimbus 2/DFS 2 assemblies have to be routed through the hole in the base of the loop sheet and connected to the CPR Unit through the manifold assembly.

5.6 Insert the end of the CPR unit (Fig 37, Item 1) into the pockets (Fig 37, Item 2) on the inside of the base cover. Push the CPR unit into the hole in the base cover.

5.7 Pass the CPR retaining strap (Fig 37, Item 3) around the back of the CPR unit and up between the manifold of the cell assembly and the CPR unit.

5.8 Connect the pop studs (Fig 29, Item 4) on the loop to secure the CPR unit.

5.9 Pass the end of the heel protector (Fig 29, Item 2) thought the loop (Fig 29, Item 3) and connect the pop stud (Fig 29, Item 1) to the inside of the base cover.

5.10 Connect the three (six on Nimbus 2/DFS 2) pop studs, which attach the cell loop sheet to the base cover, at the foot end of the bed (Refer to Fig 31).

5.11 Connect the six pop studs, which attach the cell loop sheet to the base cover, at the head end of the bed (Refer to Fig 30).

5.12 Install the top cover (Refer to Page 3, Section 3).

6 Replacing the Soft Foam Sheet

6.1 Remove the top cover (Refer to Page 3, Section 2).

6.2 Disconnect the three (six on Nimbus 2/DFS 2) pop studs (Fig 30, Item 1) which connect the cell loop sheet to the base cover at the foot end of the bed.

6.3 Disconnect the six pop studs (Fig 31, Item 1) which connect the cell loop sheet to the base cover at the head end of the bed.

6.4 Lift the mattress cell assembly from the side opposite to the manifold and remove the soft foam sheet (Fig 32, Item 1) from the corner pockets (Fig 32, Item 3) in the base cover and pull the foam sheet from around the sensor pad hoses using the slit in the end of the foam sheet.

6.5 Carefully remove the soft foam sheet so as to not damage the sensor pad underneath.

6.6 Lift the mattress cell assembly from the side opposite to the manifold and position the soft foam sheet (Fig 32, Item 1) over the sensor pad. Fit the foam sheet around the sensor pad hoses using the slit in the end of the foam sheet. Insert the corners of the foam sheet into the corner pockets (Fig 32, Item 3) in the base cover.

6.7 Connect the three (six on Nimbus 2/DFS 2) pop studs, which attach the cell loop sheet to the base cover, at the foot end of the bed (Refer to Fig 31).

6.8 Connect the six pop studs, which attach the cell loop sheet to the base cover, at the head end of the bed (Refer to Fig 30).

6.9 Install the top cover (Refer to Page 3, Section 3).

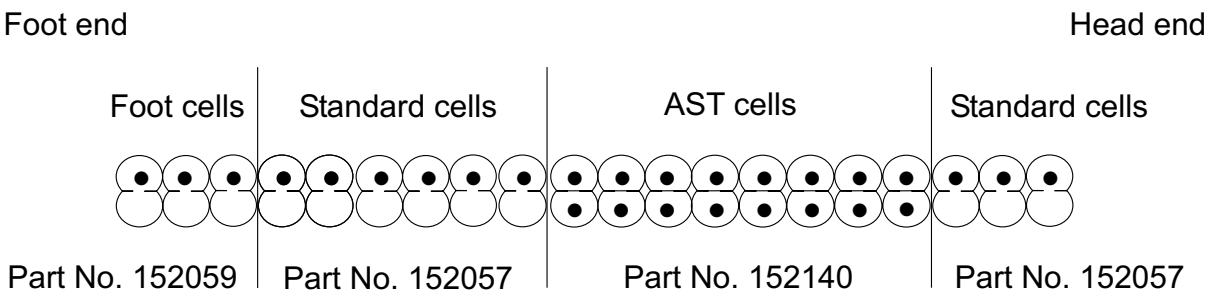


Figure 38 - Cell Configuration and Part Numbers

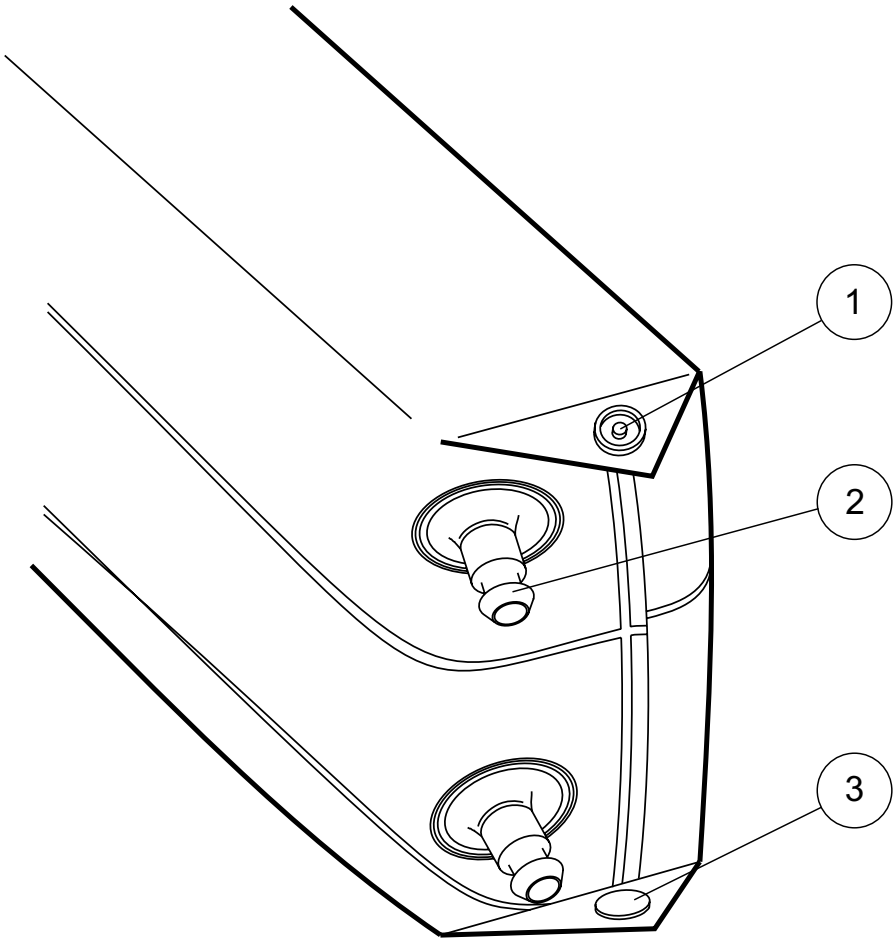


Figure 39 - Cell pop studs and connectors

7 Cell Replacement

7.1 There are 4 different types of cell (20 in total) in a Nimbus and DFS mattress. The cell configuration is shown in Fig 38.

7.2 Always check that the replacement cell is of the same type as the cell to be changed.

8 Removing a Cell

8.1 Remove the top cover (Refer to Page 3, Section 2).

8.2 Disconnect the four pop studs (two either end) located on the cell corner flaps (Fig 39, Items 1 and 3).

8.3 Disconnect the connector(s) (Fig 39, Item 2) from the manifold assembly.

Note : The AST cells have 2 connectors, the foot and standard cells have 1 connector.

8.4 Remove the cell from the loops in the base of the mattress.

9 Installing a Cell

9.1 Make sure the cell is the correct type for its position in the mattress (Refer to Fig 38).

9.2 Feed the cell through the loops in the base of the mattress, the connectors should be adjacent to the manifold assembly.

9.3 Locate the mattress loop sheet (Fig 40, Item 2) over the manifold pop stud (Fig 40, Item 3) and connect the lower cell pop stud (Fig 40, Item 1) to the manifold assembly. If the pop studs will not connect, then turn the cell through 180 degrees, the connector(s) must remain adjacent to the manifold.

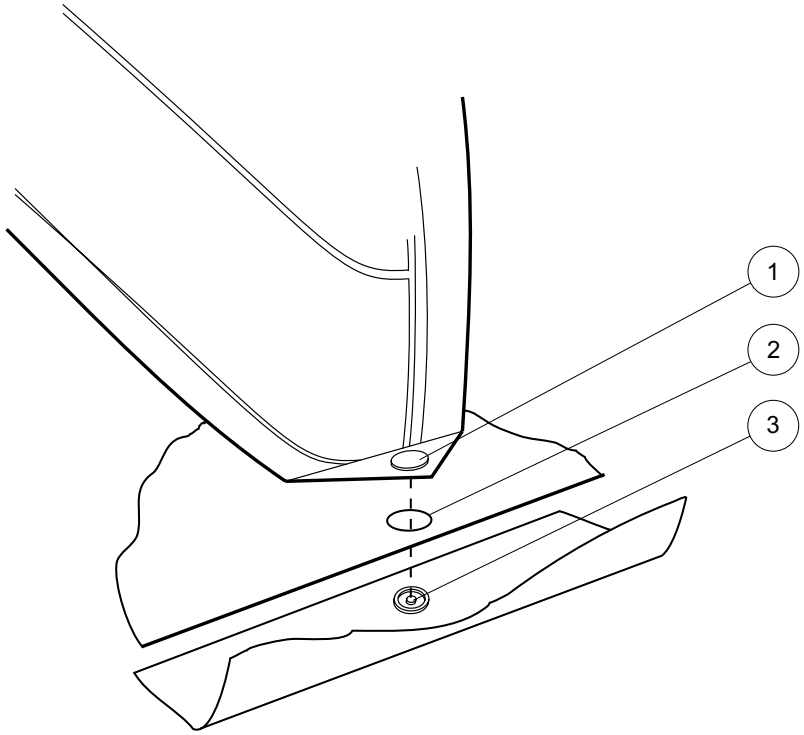


Figure 40 - Lower Manifold Pop Stud

9.4 Connect the lower pop stud, at the opposite end of the cell, to the mattress loop sheet.

9.5 Push the cell connector(s) (Fig 39, Item 2) fully into the manifold assembly.

Note : Fitting the connectors into the manifold assembly is made easier if the connector is wetted with methylated spirit immediately prior to insertion.

9.6 Connect the two pop studs (Fig 39, Item 1) at the top of the cell to the mattress.

9.7 Check that all pop studs on the mattress remain connected and have not been disturbed by the repair.

9.8 Install the top cover (Refer to Page 3, Section 3).

10 Removing the Manifold Assembly

10.1 Remove the top cover (Refer to Page 3, Section 2).

10.2 Disconnect all the upper pop studs (Fig 39, Item 1) on the cell corner flaps from the manifold assembly.

10.3 Disconnect all the cell connector(s) (Fig 39, Item 2) from the manifold assembly.

10.4 Disconnect all the lower pop studs (Fig 39, Item 3) on the cell corner flaps from the manifold assembly.

10.5 Disconnect the three (six on Nimbus 2/DFS 2) pop studs (Fig 30, Item 1) which connect the cell loop sheet to the base cover at the foot end of the bed.

10.6 Unclip the pop stud (Fig 29, Item 1) from the heel protector (Fig 29, Item 2) at the foot end of the bed.

10.7 Pull the heel protector (Fig 29, Item 2) out of the loop (Fig 29, Item 3) and unclip the two pop studs (Fig 29, Item 4).

10.8 Push the transport knob end of the CPR unit out of the base cover and then remove the CPR unit from the two corner pockets.

10.9 Fold back the cell assembly at the foot end of the bed to reveal the sensor pad hoses (Fig 36, Item 1). Disconnect the sensor pad hoses from the hoses on the back of the CPR unit.

10.10 Disconnect the heel protector tube (Fig 41, Item 1) from the manifold.

10.11 Remove the clip (Fig 41, Item 2) and disconnect the blank connector from the manifold.

10.12 Disconnect the three CPR connectors (Fig 41, Item 3) from the manifold assembly.

10.13 Remove the manifold assembly.

11 Installing the Manifold Assembly

11.1 Connect the three CPR connectors (Fig 41, Item 3) to the manifold assembly.

11.2 Connect the blank connector through the hole in the CPR unit and the clip and into the manifold assembly. Tighten the clip.

11.3 Connect the heel protector tube (Fig 41, Item 1) to the manifold.

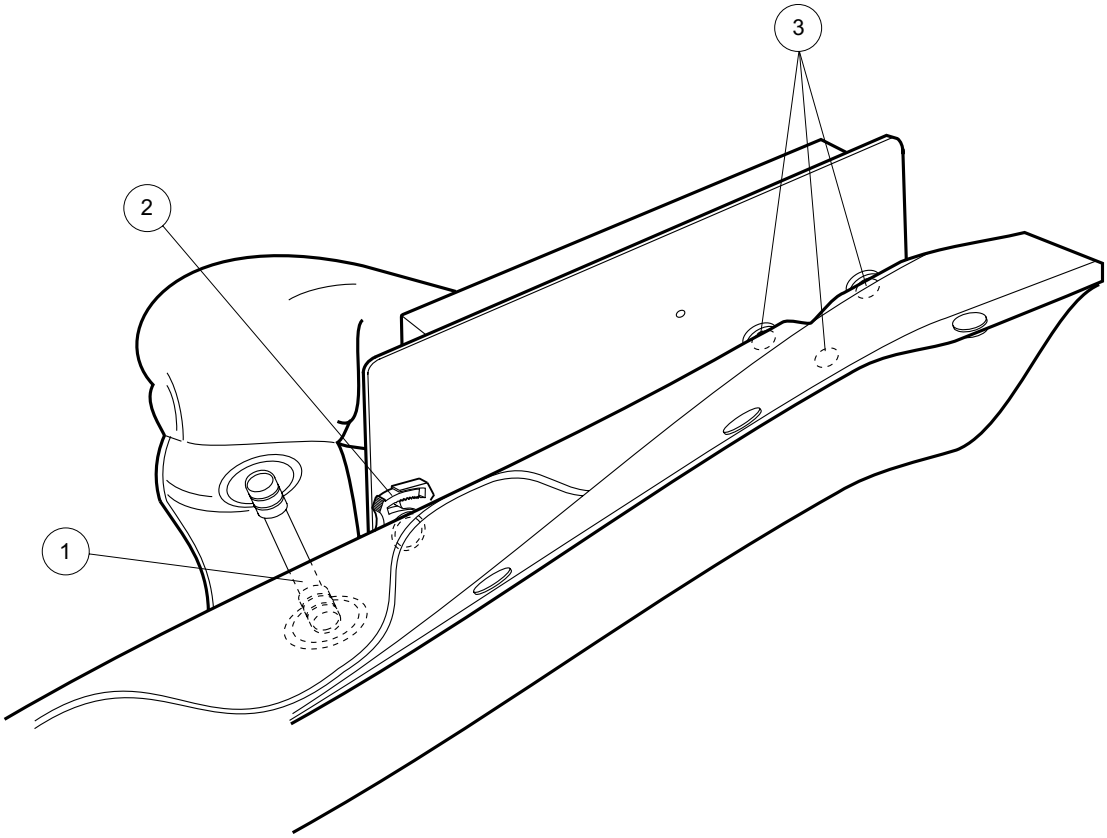


Figure 41 - CPR and Heel Protector Connections to the Manifold Assembly

11.4 Connect all the lower pop studs (Fig 39, Item 3) on the cell corner flaps to the manifold assembly.

11.5 Push all the cell connector(s) (Fig 39, Item 2) fully into the manifold assembly.

11.6 Connect all the upper pop studs (Fig 39, Item 1) on the cell corner flaps to the manifold assembly.

11.7 Fold back the cell assembly at the foot end of the bed to reveal the sensor pad hoses (Fig 36, Item 1). Connect the sensor pad hoses from the hoses on the back of the CPR unit.

11.8 Connect the six pop studs, which attach the cell loop sheet to the base cover, at the head end of the bed (Refer to Fig 30).

11.9 Insert the end of the CPR unit (Fig 37, Item 1) into the pockets (Fig 37, Item 2) on the inside of the base cover. Push the CPR unit into the hole in the base cover.

11.10 Pass the CPR retaining strap (Fig 37, Item 3) around the back of the CPR unit and up between the manifold of the cell assembly and the CPR unit.

11.11 Connect the pop studs (Fig 29, Item 4) on the loop to secure the CPR unit.

11.12 Pass the end of the heel protector (Fig 29, Item 2) thought the loop (Fig 29, Item 3) and connect the pop stud (Fig 29, Item 1) to the inside of the base cover.

11.13 Connect the three (six on Nimbus 2/DFS 2) pop studs, which attach the cell loop sheet to the base cover, at the foot end of the bed (Refer to Fig 31).

11.14 Install the top cover (Refer to Page 3, Section 3).

12 Removing the Partial Non-Return Valve Assemblies

12.1 Unzip the top cover on the CPR side of the mattress and fold it back.

12.2 Locate the partial non-return valve assemblies (Fig 42, Item 1) at the head end of the manifold assembly.

12.3 Disconnect the partial non-return valve assemblies from the manifold assembly at both ends.

13 Installing the Partial Non-Return Valve Assemblies

13.1 Connect the partial non-return valve assemblies (Fig 42, Item 1) to the manifold assembly. Make sure that the arrow mark on both valves points to the head end of the mattress.

Note : Mattress malfunction will occur if the partial non-return valve assemblies are fitted incorrectly.

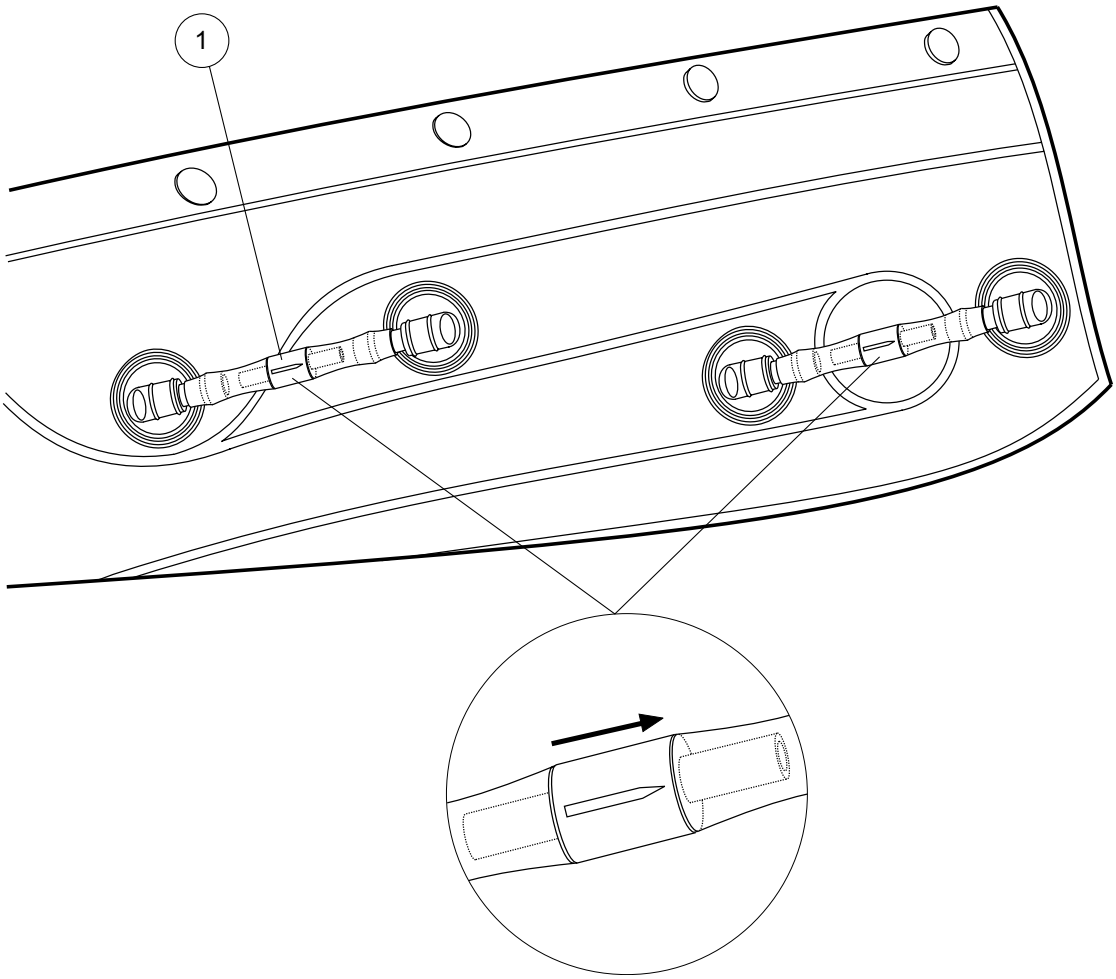


Figure 42 - Partial Non-Return Valve Assemblies

14 Removing the Loop Sheet Assembly

14.1 Remove the top cover (Refer to Page 3, Section 2).

14.2 Disconnect all the lower pop studs (Fig 39, Item 3) on the cell corner flaps from the manifold assembly.

14.3 Disconnect all the lower and upper pop studs (Fig 39, Items 1 and 2) on the cell corner flaps from the side of the loop sheet.

14.4 Remove each cell from the loops and remove the loop sheet assembly.

14.5 For Nimbus 3/DFS 3 assemblies remove the elastic loops and support boards from the loop sheet.

15 Installing the Loop Sheet Assembly

15.1 Fold the cells back over the manifold assembly.

15.2 Lay the loop sheet assembly over the soft foam sheet.

15.3 Feed the cells through their corresponding loops and connect the lower and upper pop studs (Fig 39, Items 1 and 2) on the cell corner flaps to the side of the loop sheet.

15.4 For each cell, locate the mattress loop sheet (Fig 40, Item 2) over the manifold pop stud (Fig 40, Item 3) and connect the lower cell pop stud (Fig 40, Item 1) to the manifold assembly.

15.5 Check that all pop studs on the mattress remain connected and have not been disturbed.

15.6 For Nimbus 3/DFS 3 assemblies, assemble the elastic loops, support boards and the cells to the loop sheet (Refer to Page 16, Section 16).

15.7 Install the top cover (Refer to Page 3, Section 3).

16 Replacing the Elastic Loops (Nimbus 3/DFS 3 Only)

Note : On Nimbus 3/DFS 3 mattresses the five cells at the foot end of the bed are retained by elastic loops which are held in position by plastic supports located into pockets on the underside of the loop sheet.

16.1 Remove the top cover (Refer to Page 3, Section 2).

16.2 At the opposite side of the mattress to the CPR Unit, fold down the side of the base cover to reveal the side of the loop sheet and the pockets on its underside.

16.3 Disconnect the upper and lower pop studs on the cell from the loop sheet and pull the cell out of the elastic loops from the end which remains attached to the manifold.

16.4 Pull the plastic support (Fig 43, Item 1) out from the pocket on the underside of the loop sheet and remove the elastic loops (Fig 43, Item 2).

16.5 Insert the end of the plastic support (Fig 43, Item 1) into the pocket on the underside of the loop sheet and feed it through to the first gap inside the loop sheet.

16.6 Feed the plastic support (Fig 43, Item 1) through the small loop of an elastic loop (Fig 43, Item 2) and then back into the loop sheet. Attach the remaining two elastic loops in a similar manner until the support is fully located in the pocket.

16.7 Pass the cell, from the manifold end, through the elastic loops and connect the lower and upper pop studs to the loop sheet.

16.8 Pull the base cover up the side of the loop sheet and install the top cover (Refer to Page 3, Section 3).

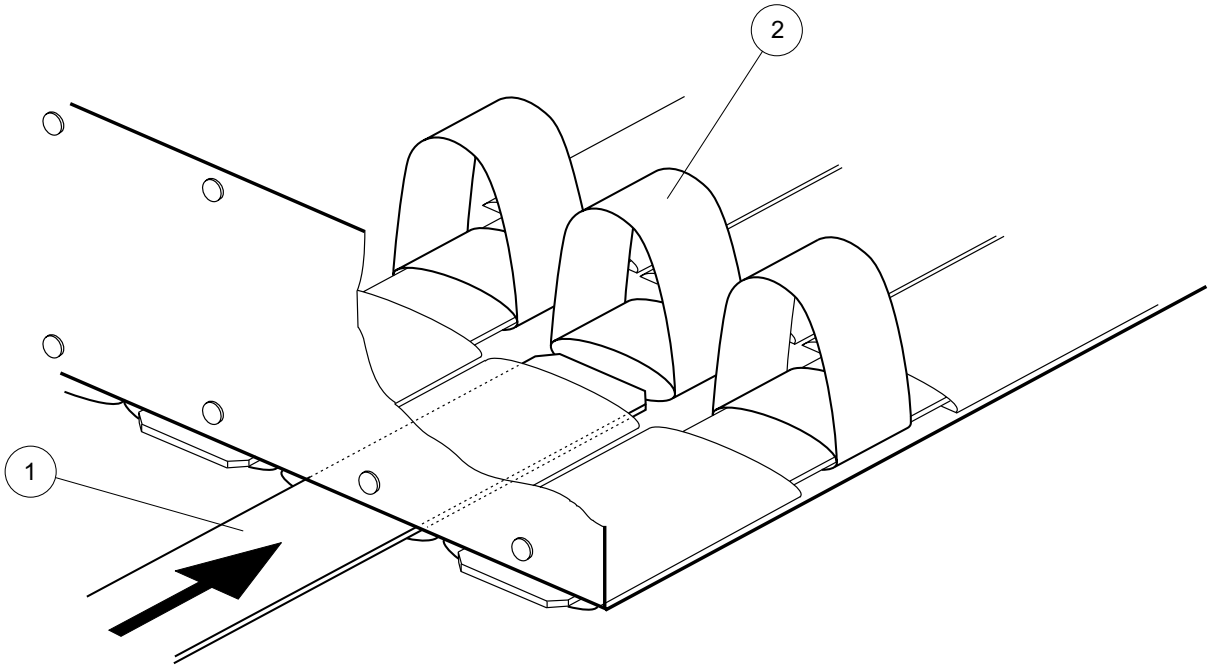


Figure 43 - Replacing the Elastic Loops (Nimbus 3/DFS 3 Only)

17 Removing the Sensor Pad Assembly

17.1 Remove the top cover (Refer to Page 3, Section 2).

17.2 Disconnect the six pop studs (Fig 31, Item 1) which connect the cell loop sheet to the base cover at the head end of the bed.

17.3 Roll the mattress cell assembly back as far as possible towards the foot end of the bed. Remove the soft foam sheet (Fig 32, Item 1) from the corner pockets (Fig 32, Item 3) in the base cover and fold it back over the mattress cell assembly.

17.4 Disconnect the 8 pop studs (Fig 44, Item 1) securing the sensor pad (Fig 44, Item 2) to the hard foam sheet.

17.5 Disconnect the sensor pad hoses (Fig 44, Item 3) from the hose sleeves (Fig 44, Item 4).

17.6 Remove the sensor pad (Fig 44, Item 2).

18 Installing the Sensor Pad

18.1 Position the sensor pad (Fig 44, Item 2) on the hard foam sheet and connect the 8 pop studs (Fig 44, Item 1) securing the sensor pad (Fig 44, Item 2) to the hard foam sheet.

18.2 Connect the sensor pad hoses (Fig 44, Item 3) to the hose sleeves (Fig 44, Item 4).

18.3 Lay the soft foam sheet (Fig 32, Item 1) over the sensor pad and tuck the corners in the pockets (Fig 32, Item 3) of the base cover.

18.4 Unroll the mattress cell assembly and connect the six pop studs (Fig 31, Item 1) which attach the cell loop sheet to the base cover at the head end of the bed.

18.5 Install the top cover (Refer to Page 3, Section 3).

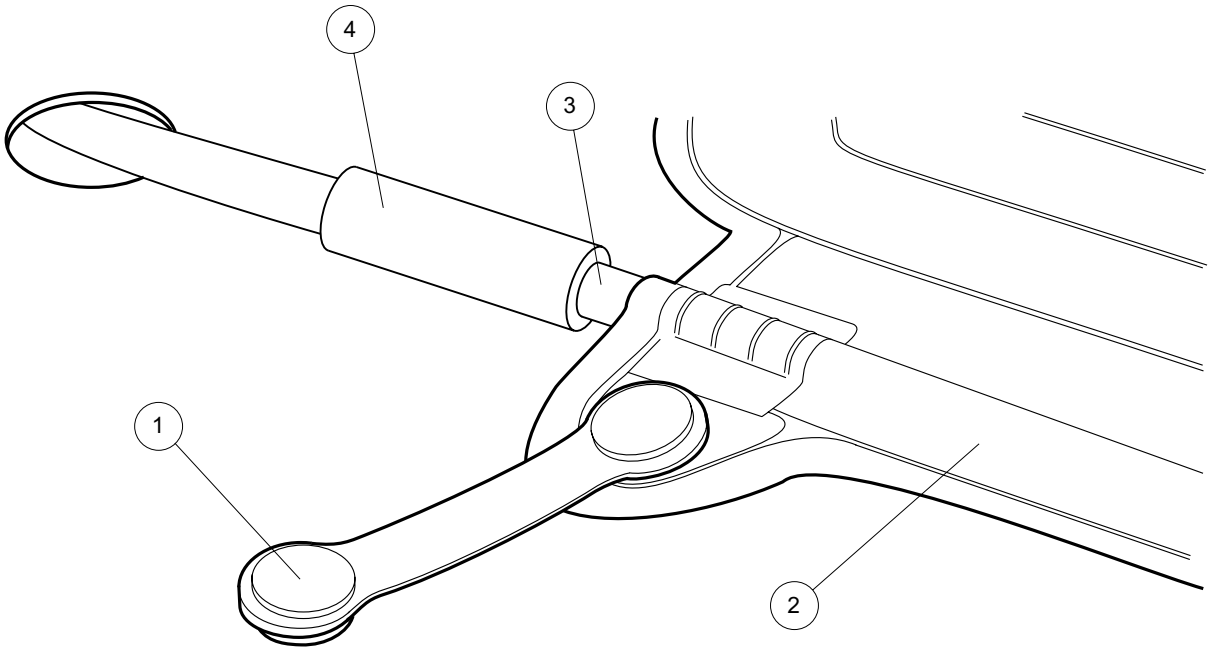


Figure 44 - Sensor Pad connections

19 Removing the CPR Unit

19.1 Remove the top cover (Refer to Page 3, Section 2).

19.2 Disconnect the three pop studs (Fig 30, Item 1) which connect the cell loop sheet to the base cover at the foot end of the bed.

19.3 Unclip the pop stud (Fig 29, Item 1) from the heel protector (Fig 29, Item 2) at the foot end of the bed.

19.4 Pull the heel protector (Fig 29, Item 2) out of the loop (Fig 29, Item 3) and unclip the two pop studs (Fig 29, Item 4).

19.5 Push the transport knob end of the CPR unit out of the base cover and then remove the CPR unit from the two corner pockets.

19.6 Fold back the cell assembly at the foot end of the bed to reveal the sensor pad hoses (Fig 36, Item 1). Disconnect the sensor pad hoses from the hoses on the back of the CPR unit.

19.7 Disconnect the heel protector tube (Fig 41, Item 1) from the manifold.

19.8 Remove the clip (Fig 41, Item 2) and disconnect the blank connector from the manifold.

19.9 Disconnect the three CPR connectors (Fig 41, Item 3) from the manifold assembly.

19.10 Remove the CPR Unit.

20 Installing the CPR Unit

20.1 Connect the three CPR connectors (Fig 41, Item 3) to the manifold assembly.

20.2 Connect the blank connector through the hole in the CPR unit and the clip and into the manifold assembly. Tighten the clip.

20.3 Connect the heel protector tube (Fig 41, Item 1) to the manifold.

20.4 Fold back the cell assembly at the foot end of the bed to reveal the sensor pad hoses (Fig 36, Item 1). Connect the sensor pad hoses from the hoses on the back of the CPR unit.

20.5 Connect the three pop studs, which attach the cell loop sheet to the base cover, at the head end of the bed (Refer to Fig 30).

20.6 Insert the end of the CPR unit (Fig 37, Item 1) into the pockets (Fig 37, Item 2) on the inside of the base cover. Push the CPR unit into the hole in the base cover.

20.7 Pass the CPR retaining strap (Fig 37, Item 3) around the back of the CPR unit and up between the manifold of the cell assembly and the CPR unit.

20.8 Connect the pop studs (Fig 29, Item 4) on the loop to secure the CPR unit.

20.9 Pass the end of the heel protector (Fig 29, Item 2) thought the loop (Fig 29, Item 3) and connect the pop stud (Fig 29, Item 1) to the inside of the base cover.

20.10 Install the top cover (Refer to Page 3, Section 3).

21 Replacing the Release Button

21.1 Press the release button and disconnect the tubeset from the manifolds on the mattress and the pump.

21.2 Refer to Fig 45. Press the release button down and insert the blade of a small flat head screwdriver in between the release button and the manifold body (A).

21.3 Carefully twist the screwdriver and push the release button up so that the retention lug can clear the manifold body.

21.4 Repeat this operation for the at position B and remove the release button.

21.5 Replace the springs as necessary.

21.6 Position the new release button over the springs and manifold body.

21.7 In a similar manner to that of removal, use a flat head screwdriver between the release button and the manifold body to position the retention lugs under the manifold body.

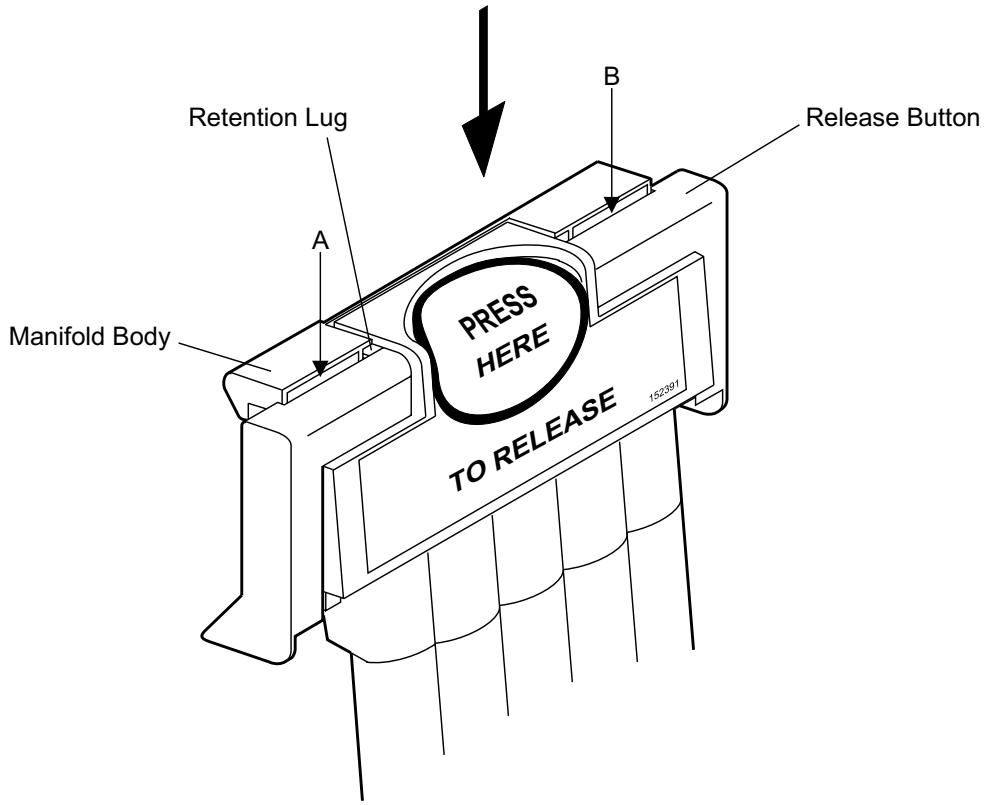


Figure 45 - Replacing a Tubeset Release Button

22 Replacing the Tubeset

22.1 Press the release button and disconnect the tubeset from the manifolds on the mattress and the pump.

22.2 Reconnect the new tubeset making sure that the connections are secure at each end.

Note : The tubeset connectors of the Nimbus 3/DFS 3 have been colour coded blue so that the pump-mattress combination cannot be confused with the Nimbus 2/DFS 2.

Table 25 - Mattress Parts List

Item	Part Number	Description	Qty
REF	152001	Mattress Assembly Standard - Nimbus 2	1
	152002	Mattress Assembly Standard - Nimbus 2 German	1
	152003	Mattress Assembly Standard - DFS 2	1
	152010	Mattress Assembly Standard - Nimbus 3	1
	152012	Mattress Assembly Standard - Nimbus 3 German	1
	152013	Mattress Assembly Standard - DFS 3	1
	237001	Mattress Assembly Narrow - Nimbus 2	1
	237003	Mattress Assembly Narrow - DFS 2	1
	237010	Mattress Assembly Narrow - Nimbus 3	1
	237013	Mattress Assembly Narrow - DFS 3	1
10	152205	Top Cover Standard - Nimbus 2	1
	152203	Top Cover Standard - DFS 2	1
	152178	Top Cover Standard - Nimbus 3	1
	152199	Top Cover Standard - DFS 3	1
	237201	Top Cover Narrow - Nimbus 2	1
	237090	Top Cover Narrow - DFS 2	1
	237095	Top Cover Narrow - Nimbus 3	1
	237102	Top Cover Narrow - DFS 3	1
20	152204	Base Cover Standard - Nimbus 2/DFS 2	1
	237200	Base Cover Narrow - Nimbus 2	1
	237085	Base Cover Narrow - DFS 2	1
	152191	Base Cover Standard - Nimbus 3/DFS 3	1
	237094	Base Cover Narrow - Nimbus 3/DFS 3	1
30	152052	Manifold Assembly	1
40	197096	Partial Non-Return Valve Assy	2

Table 21 - Mattress Parts List (Continued)

Item	Part Number	Description	Qty
50	152059	Foot Cell - Standard	3
	237059	Foot Cell - Narrow	3
60	152057	Standard Cell - Standard	9
	237057	Standard Cell - Narrow	9
70	152140	AST Cell - Standard	8
	237140	AST Cell - Narrow	8
80	152073	Heel Protector	1
90	152318	Blank Connector (CPR Unit)	1
100	152301	Clip	1
110	NMB441	Soft Foam Sheet	1
120	152113	Hard Foam Sheet	1
130	152114	Sensor Pad (Auto-Matt)	1
140	152383	Small Hard Foam Sheet	1
150	152173	Loop Sheet Standard - Nimbus 3/DFS 3	1
	237097	Loop Sheet Narrow - Nimbus 3/DFS 3	1
	152067	Loop Sheet Standard - Nimbus 2/DFS 2	1
	237067	Loop Sheet Narrow - Nimbus 2/DFS 2	1
160	152404	Elastic Loop (Nimbus 3/DFS 3 Only)	15
170	152403	Support Strap Standard - Nimbus 3/DFS 3	5
	237305	Support Strap Narrow - Nimbus 3/DFS 3	5
180	151075	Tubeset - Nimbus 2/DFS 2	1
	151125	Tubeset, Long - Nimbus 2/DFS 2 (2.5 metres)	1
	151134	Tubeset - Nimbus 3/DFS 3	1
190	151302	Tubeset Release Button - Nimbus 2/DFS 2	2
	151445	Tubeset Release Button - Nimbus 3/DFS 3	2
200	151342	Tubeset Spring	4
210	152409	Kit Bag - Nimbus 3	1
	152355	Kit Bag - Nimbus 2	1
	NMB551	Kit Bag - DFS 2/DFS3	1

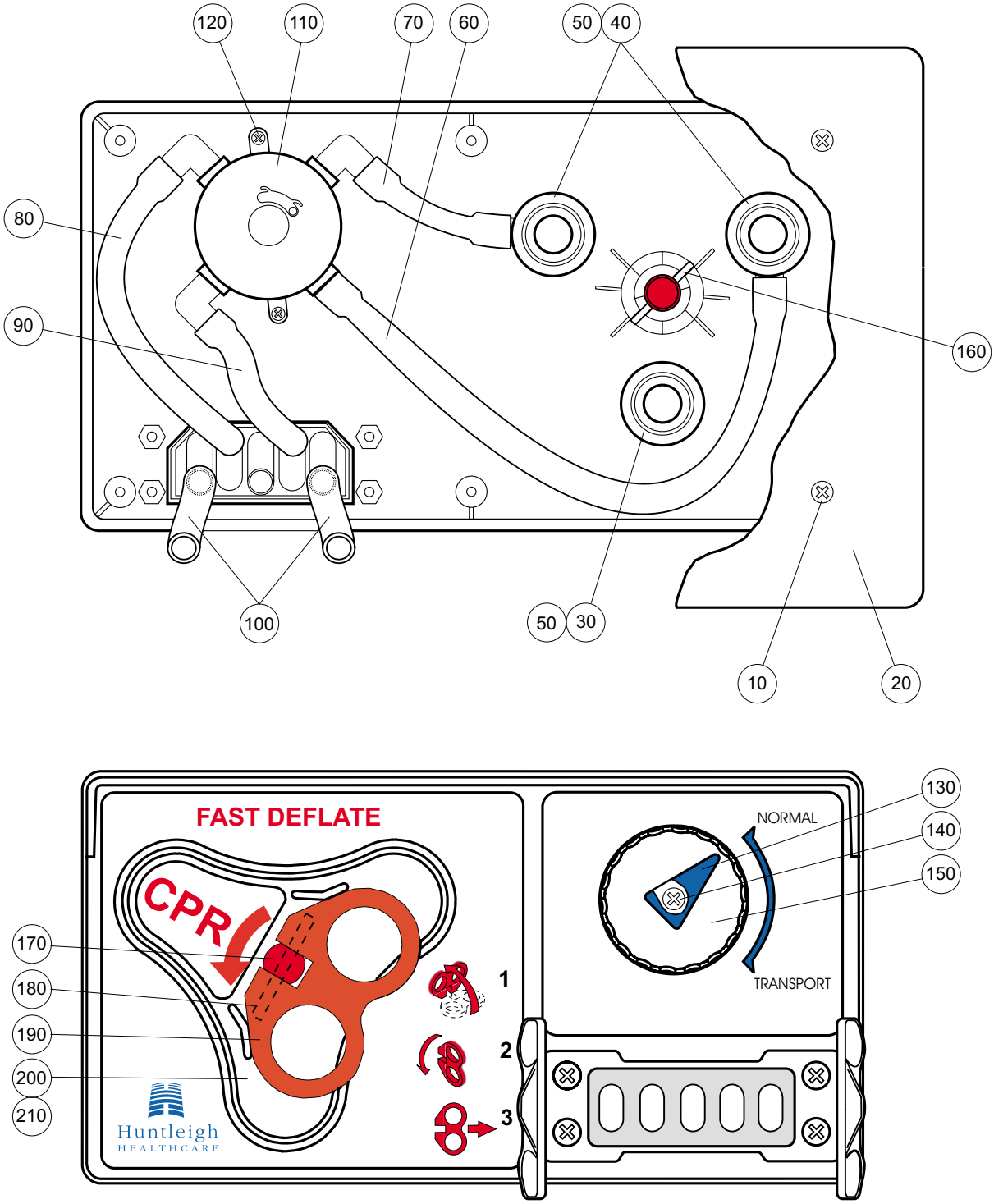


Figure 46 - CPR Unit Components

23 Replacing the CPR O-Rings

23.1 Remove the CPR Unit from the manifold mattress (Refer to Page 18, Section 19).

23.2 Remove the screws (Fig 46, Item 10) and the backplate (Fig 46, Item 20) from the CPR Unit .

23.3 Replace the O-Ring (Fig 46, Item 50) on each connector as follows:

23.3.1 Remove the connector (Fig 46, Item 30 or 40) from the hole in the front of the CPR Unit. The hoses can remain on the connector.

23.3.2 Using a blunt electricians screwdriver or similar, carefully lift a section of the worn O-ring from its recess in the connector. Taking care not to damage the O-ring seat, ease the O-ring forward and off the connector.

23.3.3 Replace the O-ring by carefully rolling along the connector until firmly seated in the recess.

23.3.4 Install the connector back in the hole in the front of the CPR Unit.

23.4 Install the backplate (Fig 46, Item 20) over the sensor pad hoses (Fig 46, Item 100) and the connectors (Fig 46, Items 30 and 40).

23.5 Install the screws (Fig 46, Item 10) to secure the backplate (Fig 46, Item 20) in position.

23.6 Install the CPR Unit to the manifold of the mattress (Refer to Page 18, Section 20).

24 Replacing the Transport Assembly

24.1 Remove the CPR Unit from the manifold mattress (Refer to Page 18, Section 19).

24.2 Carefully remove the triangular label (Fig 46, Item 130) from the centre of the transport knob (Fig 46, Item 150).

24.3 Remove the screw (Fig 46, Item 140) and the transport knob (Fig 46, Item 150) from the shaft.

24.4 Lay the CPR Unit face down on a firm surface and remove the screws (Fig 46, Item 10) and the backplate (Fig 46, Item 20) from the CPR Unit .

24.5 Disconnect the four hoses (Fig 46, Items 60, 70, 80 and 90) from the transport assembly (Fig 46, Item 110).

24.6 Remove the screws (Fig 46, Item 120) and the transport assembly (Fig 46, Item 110) from the CPR Unit.

24.7 Install the transport assembly (Fig 46, Item 110) into the CPR Unit in the orientation shown in Fig 46.

24.8 Install the screws (Fig 46, Item 120) to secure the transport assembly (Fig 46, Item 110).

24.9 Connect the four hoses (Fig 46, Items 60, 70, 80 and 90) from the transport assembly (Fig 46, Item 110).

24.10 Install the backplate (Fig 46, Item 20) over the sensor pad hoses (Fig 46, Item 100) and the connectors (Fig 46, Items 30 and 40).

24.11 Install the screws (Fig 46, Item 10) to secure the backplate (Fig 46, Item 20) in position.

24.12 Install the CPR Unit to the manifold of the mattress (Refer to Page 18, Section 20).

25 Repairing the CPR Handle Sub-Assembly

25.1 Remove the CPR Unit from the manifold mattress (Refer to Page 18, Section 19).

25.2 Remove the screws (Fig 46, Item 10) and the backplate (Fig 46, Item 20) from the CPR Unit .

25.3 Remove the pin (Fig 46, Item 160) from inside the CPR Unit.

25.4 Remove the handle, the shaft, the pin, the cap and the spring (Fig 46, Items 190, 170, 180, 200 and 210).

25.5 If the handle (Fig 46, Item 190) or the shaft (Fig 46, Item 170) need to be replaced then they need to be replaced as a sub assembly together with the pin (Fig 46, Item 180).

25.6 If the new parts come disassembled, insert the cut away end of the shaft (Fig 46, Item 170) into the handle (Fig 46, Item 190) and install the pin (Fig 46, Item 180).

25.7 Insert the shaft (Fig 46, Item 170) into the cap (Fig 46, Item 200).

25.8 Place the spring (Fig 46, Item 210) into the shaped recess on the inside of the cap (Fig 46, Item 200).

25.9 Carefully, holding the spring in position against the inside of the cap, position the other end of the spring into the shaped recess on the front of the CPR Unit.

25.10 Making sure that the spring does not come out of the recesses, locate the shaft of the cap into the hole in the CPR Unit.

25.11 Holding the back of the CPR Unit, push the cap towards the CPR Unit, rotate the cap clockwise, and insert the cap into the shape of the CPR Unit. Lay the CPR Unit face down and hold the CPR handle sub-assembly in position.

25.12 Push each connector (Fig 46, Items 30 and 40) down to locate the O-Rings into the cap.

25.13 Insert the pin (Fig 46, Item 160) through the end of the shaft (Fig 46, Item 170). Centre the pin so that equal amounts are either side of the shaft.

25.14 Install the backplate (Fig 46, Item 20) over the sensor pad hoses (Fig 46, Item 100) and the connectors (Fig 46, Items 30 and 40).

25.15 Install the screws (Fig 46, Item 10) to secure the backplate (Fig 46, Item 20) in position.

25.16 Install the CPR Unit to the manifold of the mattress (Refer to Page 18, Section 20).

26 Replacing the CPR Manifold Gasket

26.1 Carefully remove the screws (Fig 47, Item 220).

Note : Do not apply pressure on the screws when removing. If pressure is applied, the brass inserts can be pushed out of the case, inside the CPR Unit. If a brass insert is lost inside the case, the backplate must be removed to retrieve it.

26.2 Remove the manifold outer (Fig 47, Item 230) and the manifold gasket (Fig 47, Item 240). The manifold inner (Fig 47, Item 250) will remain connected to the hoses inside the CPR Unit.

26.3 Install the new manifold gasket (Fig 47, Item 240) and the manifold outer (Fig 47, Item 230) to the manifold inner (Fig 47, Item 250).

26.4 Carefully install the screws (Fig 47, Item 220). Make sure the screws are threaded into the brass inserts before applying pressure to tighten.

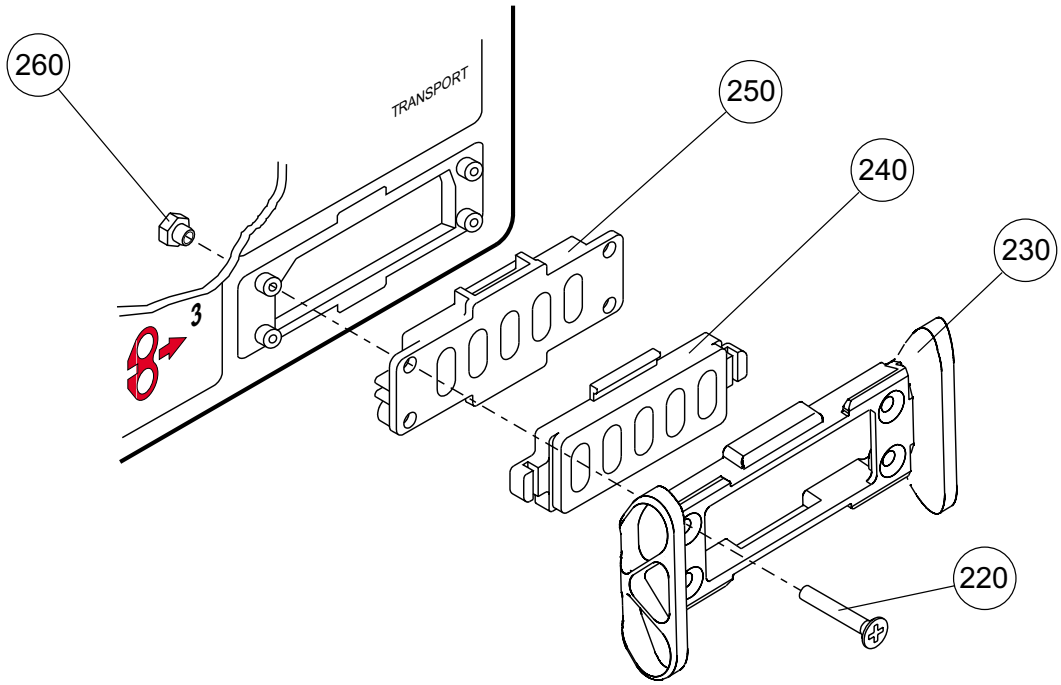


Figure 47 - Replacing the CPR Manifold Gasket

Table 26 - CPR Unit Component Parts List

Item	Part Number	Description	Qty
REF	152077	CPR Module Asembly (Nimbus 2/DFS 2, except Germany)	1
	152152	CPR Module Asembly (Nimbus 2 German Only)	1
	152192	CPR Module Asembly (Nimbus 3/DFS 3, except Germany)	1
	152202	CPR Module Asembly (Nimbus 3 German Only)	1
10	FAS180	Screw 3mm DIA x 12mm Pozi	6
20	152329	Backplate	1
30	152319	Connector	1
40	152332	Connector	1
50	152341	O-Ring Seal	1
60	152079	Hose 44mm ±2mm	1
70	152136	Hose 100mm ±2mm	1
80	152334	Hose CPR Air Inlet Long	1
90	152356	Hose CPR Air Inlet Short	1
100	152136	Hose 100mm ±2mm	2
110	152399	Transport Assembly	1
120	FAS145	Screw 3mm DIA x 8 Pozi Pan Head PT	2
130	152308	Transport Knob Label	1
140	FAS189	Screw M3 x 6mm C’SK Head Pozi	1
150	152322	Transport Knob	1
160	FAS192	Pin 3 x 24 LG MDP	1
170	152330	Shaft CPR Handle	1
180	FAS192	Pin 3 x 24 LG MDP	1
190	152331	Handle CPR Pull	1
200	152321	Cap CPR Body	1
210	152320	Spring CPR	1
220	FAS041	Screw M3 x 20mm C’SK Pozi	4
230	151471	Connector Manifold Braced Blue (Nimbus 3/DFS 3)	1
	151476	Connector Manifold Braced Grey (Nimbus 2/DFS 2)	1
240	151304	Gasket 5 Way Manifold	1
250	151480	Manifold 5 Way Barbed	1
260	BP024	Brass Threaded Insert	4

27 Alternating Head Cells

The modification can be applied in two configurations:

Configuration 1

All three head cells are converted from static pressure to alternating pressure.

Configuration 2

The top head cell remains as a static pressure cell. The second and third cells are converted from static pressure to alternating pressure.

Modification Kit

The modification kit comprises the following components:

Table 27 - Alternating Head Cells Modification Kit

Item	Part Number	Description	Qty
10	152418	'T' Pieces (polypropylene)	3
20	152419	Elbow Pieces (polypropylene)	2
30	152420	Blanking Plugs (acetyl)	3
40	152209	Lengths of PVC Clear Tubing	3
50	152901	User Guidance Notes	1

28 Installing the Alternating Head Cell Modification - Configuration 1

28.1 Inflate the mattress. Unzip the top cover and lay it back, clear of the head end of the mattress.

28.2 Disconnect the top six manifold pop studs to reveal the six cell valves (Fig 48).

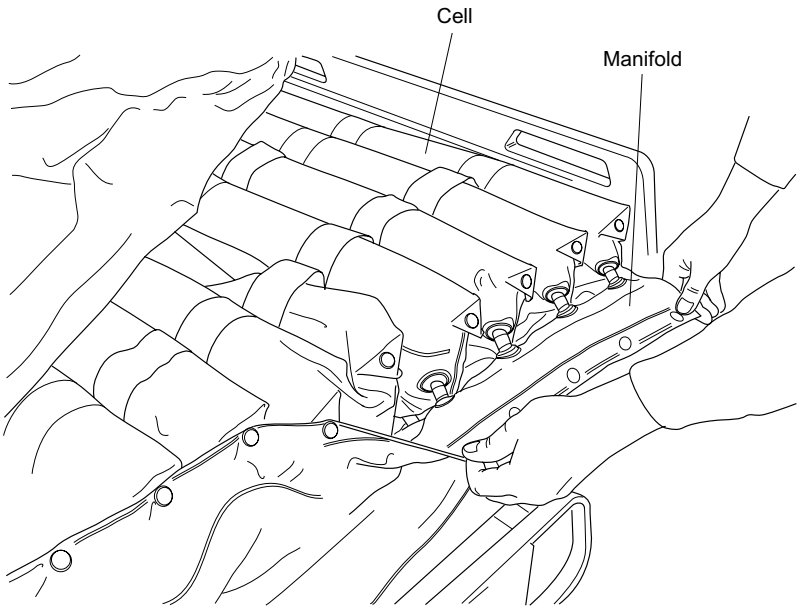


Figure 48 - Disconnect the Manifold Pop Studs

28.3 Remove the straight connectors from cell valves 1 to 5 (Fig 49).

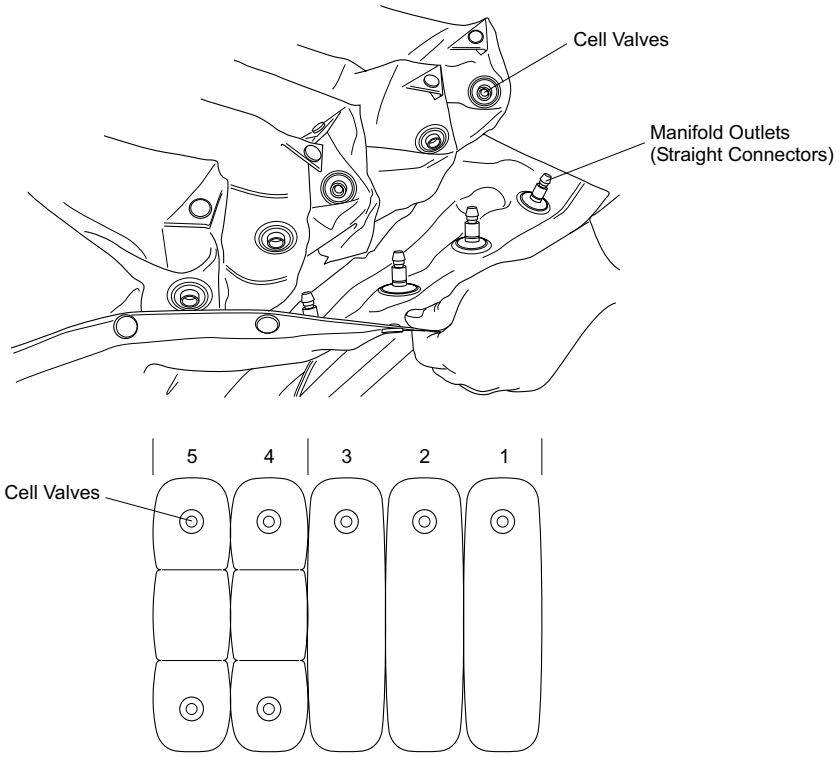


Figure 49 - Remove the Straight Connectors (Configuration 1)

28.4 Fit the ‘T’ and elbow pieces to the cell valves 1 to 5 as shown in Fig 50.

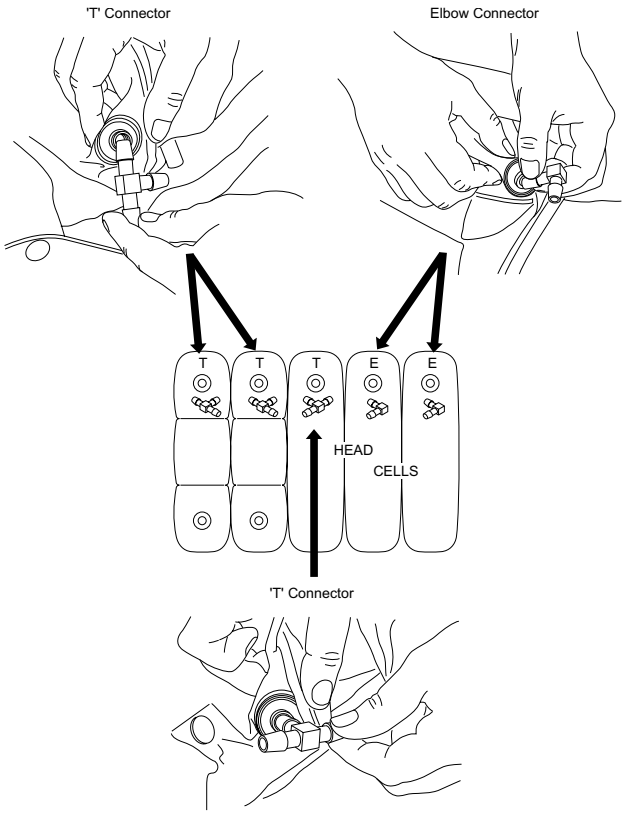


Figure 50 - Fit ‘T’ and Elbow Pieces (Configuration 1)

28.5 Connect the tubes to the valves as shown in Fig 51.

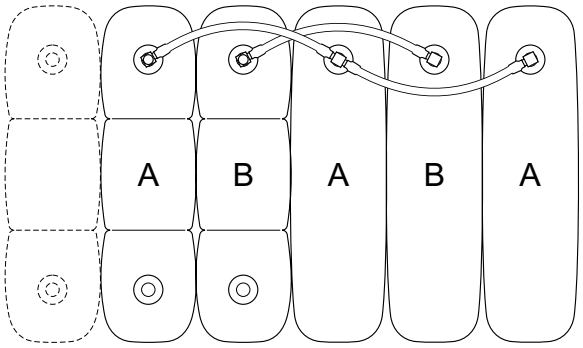


Figure 51 - Connect the tubes (Configuration 1)

28.6 Remove the straight connectors from the manifold outlets that feed the top five cells of the mattress. Connect the two ‘T’ pieces to the manifold outlets. Fit blanking plugs to the three top manifold outlets (Fig 52).

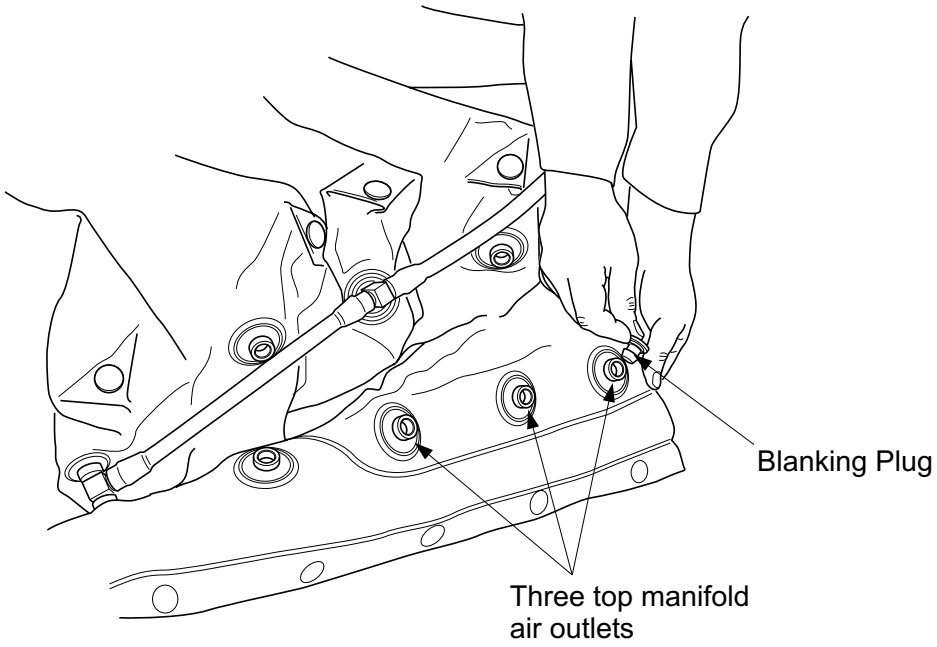


Figure 52 - Fit blanking plugs (Configuration 1)

28.7 Check the integrity of all the connectors to ensure they are securely fitted.

28.8 Switch the pump ON and check that the pressure in the three head cells alternates satisfactorily in dynamic mode.

28.9 Check that the WAIT, HIGH PRESSURE and LOW PRESSURE indicators still function correctly.

28.10 Check the Alarm system still functions correctly.

28.11 When satisfied that the modified bed is operating satisfactorily, close the manifold to the bed with the pop studs and zip up the top cover.

29 Installing the Alternating Head Cell Modification - Configuration 2

Note: Not all parts of the kit are used if only two cells alternate as in Configuration 2.

29.1 Inflate the mattress. Unzip the top cover and lay it back, clear of the head end of the mattress.

29.2 Disconnect the top six manifold pop studs to reveal the six cell valves (Fig 48).

29.3 Remove the straight connectors from cell valves 2 to 5 (Fig 53).

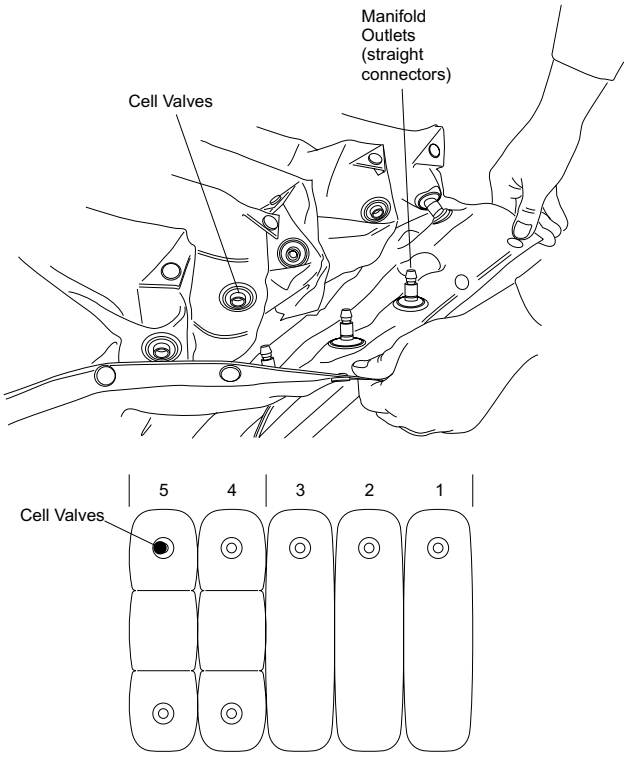


Figure 53 - Remove the Straight Connectors (Configuration 2)

29.4 Fit the ‘T’ and elbow pieces to the cell valves 2 to 5 as shown in Fig 54.

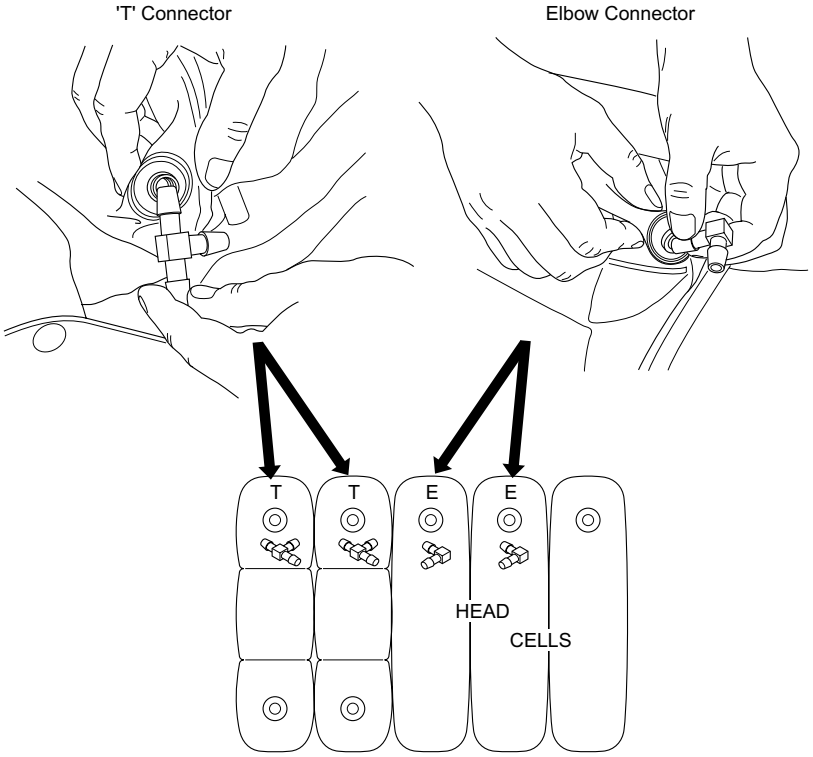


Figure 54 - Fit ‘T’ and Elbow Pieces (Configuration 2)

29.5 Connect the tubes to the valves as shown in Fig 55.

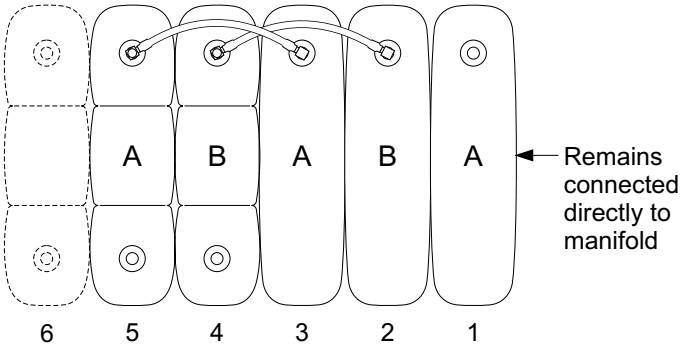


Figure 55 - Connect the tubes (Configuration 2)

29.6 Remove the straight connectors from the manifold outlets that feed the 2nd to 5th cells of the bed from the top. Connect the two ‘T’ pieces to the manifold outlets. Fit blanking plugs to the 2nd and 3rd top manifold air outlets (Fig 56).

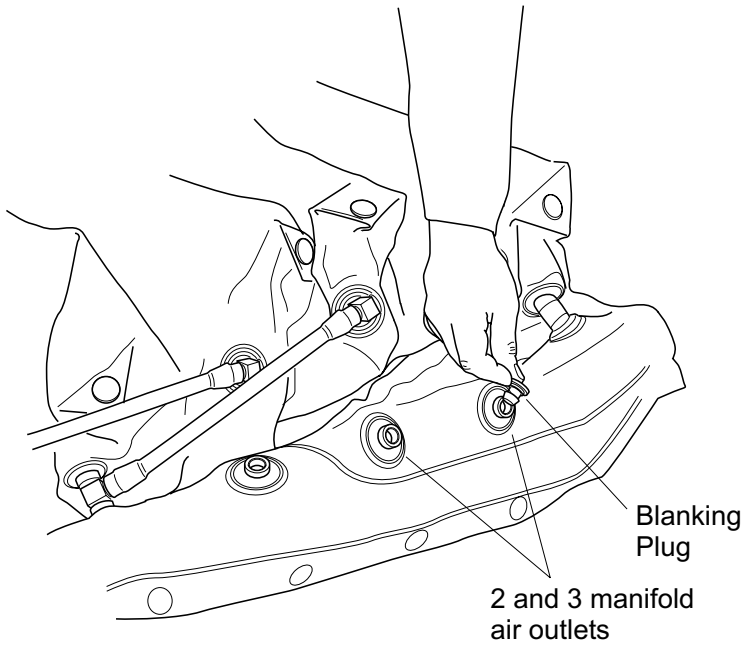


Figure 56 - Fit blanking plugs (Configuration 2)

29.7 Check the integrity of all the connectors to ensure they are securely fitted.

29.8 Switch the pump ON and check that the pressure in the 2nd and 3rd head cells alternate satisfactorily in dynamic mode.

29.9 Check that the WAIT, HIGH PRESSURE and LOW PRESSURE indicators still function correctly.

29.10 Check the Alarm system still functions correctly.

29.11 When satisfied that the modified bed is operating satisfactorily, close the manifold to the bed with the pop studs and zip up the top cover.

CHAPTER 5
TROUBLESHOOTING

1 Troubleshooting Table

The following table contains fault symptoms, their possible causes and suggests steps to rectify the problem. Where possible, reference is made to the relevant repair Chapters.

Fault	*Possible Cause*		*Remedy*
High Pressure (HP) Alarm	**Mattress**	Sensor pad tube kinked.	Rectify or replace the tube.
	Tubeset	Tubeset kinked or blocked.	Clear blockage or replace. (Ch 4, Pg 20, Section 22)
	Pump	Pressure control incorrectly set or faulty.	Reset or replace (Ch 3, Pg 29, Section 24 and 25)
		Faulty HP switch.	Replace (Ch 3, Pg 31, Section 26 and 27)
		Blocked Bio-Filter (Nimbus 3/DFS 3)	Replace (Ch 3, Pg 49, Section 41 and 42)
Low Pressure (LP) Alarm	**Tubeset**	Incorrectly connected.	Check fitting.
		Damaged.	Replace (Ch 4, Pg 20, Section 22)
	Mattress & Pump	Mattress 5-way gasket damaged.	Replace (Ch 4, Pg 25, Section 26)
		Pump 5-way gasket damaged.	Replace (Ch 3, Pg 17, Section 17)
		Loose CPR assembly.	Secure.

Fault	*Possible Cause*		*Remedy*
Low Pressure (LP) Alarm (contd.)	**Mattress**	Mattress in **TRANSPORT** mode.	Return to **NORMAL** mode.
		CPR assembly not closed properly	Reset the CPR.
		Cell leak.	Trace and replace (Ch 4, Pg 11, Section 7)
		Leak in non-return valves.	Replace (Ch 4, Pg 14, Section 12 and 13)
		Manifold Leak.	Replace (Ch 4, Pg 12, Section 10 and 11)
	Mattress (contd.)	Transit control seal damaged.	Replace (Ch 4, Pg 23, Section 24)
		Sensor pad disconnected.	Connect sensor pad.
	Pump	Damaged/disconnected tube.	Check internal tubing and replace if necessary.
		Faulty compressor.	Check shuttle and replace if necessary. (Ch 3, Pg 15, Section 15)
		Blocked air filters.	Replace. (Ch 3, Pg 13, Section 12)
		Faulty Low Pressure Switch	Test the switch and replace the Pressure Control Assy if necessary. (Ch 3, Pg 29, Section 24 and 25)
Service Indicator Light On	—		Service required. (Ch 2, Pg 2, Section 3) ***Note***: Pump should still be operable.
No Power Fail Alarm	**Pump**	Battery discharged.	Leave unit on for 24 hours to recharge.
		Battery failure.	Replace battery (Ch 3, Pg 51, Section 43)

Fault	*Possible Cause*		*Remedy*
Power Fail Alarm With Unit Off	**Pump**	Faulty Mains/Power Switch.	Check and replace. (Only applies to early versions with more than one PCB) (Ch 3, Pg 33, Section 28)
		Poor connection between Power and Control Boards.	Check and repair.
Pump Fault Alarm	**Pump**	Rotor Assy faulty.	Check and replace the Rotor Assy if necessary (Ch 3, Pg 18, Section 18 and 19)
		Main PCB Faulty	Check and replace if necessary (Ch 3, Pg 21, Section 20)

CHAPTER 6

TESTING

1 Pump Flow, Pressure and Function Test

This procedure must be carried out after a service or major repair of a pump. To test/calibrate the pump unit correctly, the following equipment is required:

Table 28 - Pump Flow, Pressure and Function Test Equipment

Equipment	Part Number
Dual Pressure Gauge (0-160 mm/Hg)/ flow meter (0-25 ltr/min)	PRE060
5-way test tubeset adaptor	151126
Psion Organiser with Service Module Adaptor or IR Interface Module, connected to a Personal Computer	MIS136 MIS138 MIS216 -

1.1 If the Psion Organiser is used to test the pump, it is assumed that the service personnel are familiar with the Psion Organiser user guide.

1.2 If the IR Interface Module is used to test the pump, it is assumed that the service personnel are familiar with the IR Interface User Manual, 151910.

1.3 All test equipment must be calibrated to national or international standards.

Test Setup

1.4 Connect the pump to a mains/power supply and switch the pump on.

1.5 All indicators on the front panel of the pump should illuminate for a few seconds and then display **ON**, **WAIT** and **LOW PRESSURE**.

1.6 Connect the pump to the dual pressure gauge/flow meter using the 5-way test tubeset adaptor.

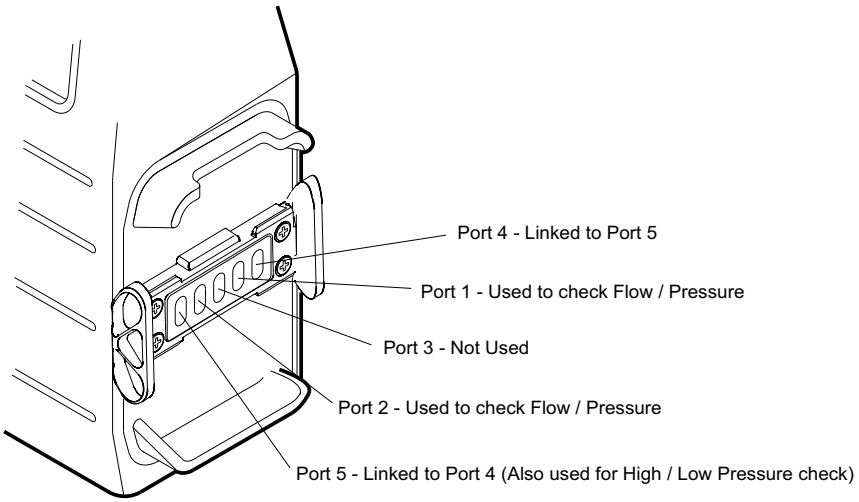

Port 4 - Linked to Port 5
Port 1 - Used to check Flow / Pressure
Port 3 - Not Used
Port 2 - Used to check Flow / Pressure
Port 5 - Linked to Port 4 (Also used for High / Low Pressure check)

Figure 57 - Pump Outlet Ports

Power Fail Alarm Check

1.7 Switch the pump off at the mains/power socket, leaving the pump switched **ON**. The pump should respond by illuminating the flashing **RED TRIANGLE** and the **POWER** message while sounding an **AUDIBLE ALARM**.

1.8 Push the **MUTE** button and the audible alarm should be silenced.

1.9 Switch the pump back on at the mains/power socket. The pump will respond in two ways:

- If the **Power Fail Option** is on - The **POWER** indicator illuminates but there is no audible alarm (Except UK).
- If the **Power Fail Option** is off - There is nothing displayed on the front panel and no audible alarm (UK Only).

Note : Make sure the option is set correctly for the country of use.

Alarm Functions

1.10 Switch the pump off and on again.

1.11 Remove the tubeset adaptor from the pump manifold. The pump should respond by illuminating the **LOW PRESSURE** indicator.

1.12 Replace the tubeset adaptor on the pump manifold. The **LOW PRESSURE** indicator should go out.

1.13 Slowly occlude the tubeset loop between ports 4 and 5 until the **HIGH PRESSURE** indicator illuminates. The pump should now cut out and the **HIGH PRESSURE** indicator should go out. Keep the tubeset loop occluded.

1.14 After the pressure has dropped the pump should restart and the **HIGH PRESSURE** indicator should illuminate again, together with the **RED TRIANGLE** and an **AUDIBLE ALARM**.

High/Low Pressure Setpoint and Mute Mode Checks

1.15 To carry out the High and Low Pressure Switch Setpoint Checks and the Mute Mode Check, refer to the specific test procedure for the type of test equipment being used:

- If the Psion Organiser is used, carry out the procedure on Page 3, Section 2.
- If the IR Interface Module is used, carry out the procedure on Page 4, Section 3.

Static and Dynamic Mode Pressure Tests

1.16 To carry out the Static and Dynamic Mode Pressure Tests, refer to the specific test procedure for the type of test equipment being used:

- If the Psion Organiser is used, carry out the procedure on Page 5, Section 4.
- If the IR Interface Module is used, carry out the procedure on Page 8, Section 5.

2 High/Low Pressure Setpoint Checks and Mute Mode Check using the Psion Organiser

Psion Organiser Setup

2.1 Refer to Page 11, Section 6 to set up the Psion Organiser.

High Pressure Switch Setpoint Check

2.2 Select **Inputs** from the Psion menu. The Psion will now display:

```
Reading HP switch
      off

Press any key for LP
```

2.3 Slowly occlude the tubeset loop between ports 4 and 5 and record the pressure on the manometer at which the Psion display changes to:

```
Reading HP switch
      on

Press any key for LP
```

Low Pressure Switch Setpoint Check

2.4 Press any key on the Psion, except for **Q**. The Psion will now display:

```
Reading LP switch
      off
Press any key for
   mute mode
```

2.5 Remove the tubeset adaptor from the pump manifold and record whether or not the display changes to:

```
Reading LP switch
      on
Press any key for
   mute mode
```

2.6 Reconnect the tubeset to the pump.

Mute Mode Check

2.7 Press any key on the Psion, except for **Q**. The Psion will now display:

```
Mute mode set to
      0
Press key for
 valve microswitch
```

OR

```
Mute mode set to
      1
Press key for
 valve microswitch
```

2.8 Check the **MUTE** mode is set correctly for the country of use (0 for the UK and 1 for the rest of the world). Press any key on the Psion, except **Q**, the Psion will now display:

```
Valve microswitch
     (on/off)*

Press key to exit
```

3 High/Low Pressure Setpoint Checks and Mute Mode Check using the IR Interface Module

IR Interface Setup

3.1 Refer to Page 11, Section 7 for the set up and usage of the IR Interface.

3.2 Select the **Test** tab on the PC, enter the password **TEKKICHECK**, and the **Test** tab will be displayed (Refer to Figure 58).

Note: The password is not case sensitive.

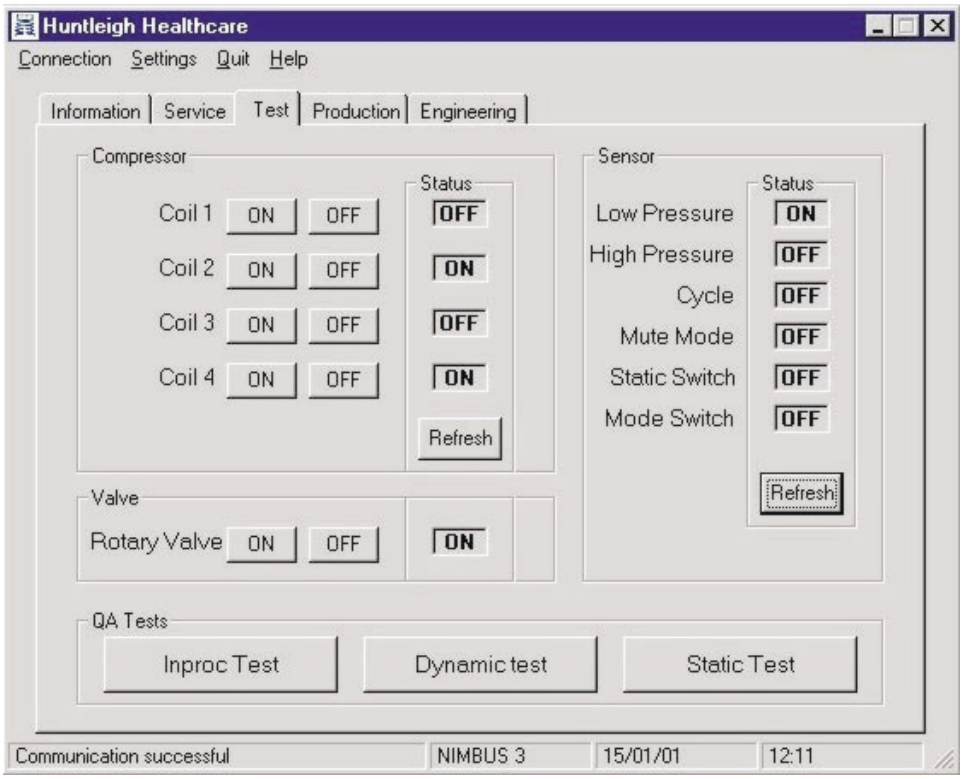


Figure 58 - Test Tab on the PC connected to the IR Interface

High Pressure Switch Setpoint Check

3.3 Click on **Refresh** at the bottom of the **Sensor - Status** column, and the **High Pressure - Status** should be set to **OFF**.

3.4 Slowly occlude the tubeset loop between ports 4 and 5, and record the pressure on the manometer at which the **High Pressure - Status** changes to **ON**.

Low Pressure Switch Setpoint Check

3.5 Click on **Refresh** at the bottom of the **Sensor - Status** column, and the **Low Pressure - Status** should be set to **OFF**.

3.6 Remove the tubeset adaptor from the pump manifold, and record whether or not the **Low Pressure - Status** changes to **ON**.

3.7 Reconnect the tubeset to the pump.

Mute Mode Check

3.8 Click on **Refresh** at the bottom of the **Sensor - Status** column, and record whether the **Mute Mode - Status** is set to **OFF** or **ON**.

3.9 Check that the **Mute Mode - Status** is set correctly for the country of use (**OFF** for the UK and **ON** for the rest of the world).

4 Static and Dynamic Mode Pressure Tests using the Psion Organiser

Static and Dynamic Mode Calibration Readings

The following table gives the calibration readings to be used in the Static and Dynamic Pressure tests that follow.

Table 29 - Static and Dynamic Mode Calibration Readings

Mode	Port	Coils	Comfort Control Setting	Pressure	Flow
Static	1 & 2	Each	Min (Soft)	15-19 mm/Hg	> 6 ltrs/min
			Max (Firm)	22-29 mm/Hg	
Dynamic	1 & 2	1 & 3 2 & 4	Min (Soft)	22-26 mm/Hg	> 9 ltrs/min & < 14 ltrs/min
			Max (Firm)	32-40 mm/Hg	

Adjusting the Pressure

Carefully prise the control knob (Chap 3, Page 28, Fig 18, Item 40) off the front panel. Turn the centre screw clockwise to increase the pressure or anticlockwise to decrease the pressure.

Psion Organiser Setup

4.1 Refer to Page 11, Section 6 to set up the Psion Organiser.

Static Mode Pressure Tests

4.2 Select **Test** from the Psion menu. Wait (for up to 5 minutes) until the Psion display changes from:

```
Please wait
for crossover
```

TO

```
Rotor in crossover
    position.
    Coil 1 on.
Go to next coil Y/N?
```

4.3 Record the manometer reading for coil 1, with the comfort control set to minimum and maximum settings.

4.4 Press **Y** on the Psion. The Psion will now display:

```
Rotor in crossover
    Position.
    Coil 2 on.
Go to next coil Y/N?
```

4.5 Record the manometer reading for coil 2, with the comfort control set to minimum and maximum settings.

4.6 Press **Y** on the Psion. The Psion will now display:

```
Rotor in crossover
    Position.
    Coil 3 on.
Go to next coil Y/N?
```

4.7 Record the manometer reading for coil 3, with the comfort control set to minimum and maximum settings.

4.8 Press **Y** on the Psion. The Psion will now display:

```
Rotor in crossover
    Position.
    Coil 4 on.
Go to next coil Y/N?
```

4.9 Record the manometer reading for coil 4, with the comfort control set to minimum and maximum settings.

4.10 If all the tests have been completed OK, press **N** on the Psion. The Psion will now display:

```
Rotor in crossover
    Position.
  Coils 1 & 3 on -
Change to 2 & 4 Y/N?
```

4.11 Press **N** again on the Psion. The Psion will display:

```
Go to Dynamic Test

Y/N?
```

4.12 Press **Y** on the Psion. Wait (up to 3 minutes) until the display changes to:

```
Rotor in port 1
Position.
Coils 1 & 3 on.
Press key for 2 & 4
```

Dynamic Mode Pressure Tests

4.13 Connect duty outlet port to the pressure gauge. Record the manometer reading for Port 1, coils 1 & 3, with the comfort control set to minimum and maximum settings.

4.14 Open the restrictor or connect to the flow meter and record the air flow of Port 1, coils 1 & 3.

4.15 Press any key, except **Q** on the Psion. The display will change to:

```
Rotor in port 1
Position.
Coils 2 & 4 on.
Press key for port 2
```

4.16 Close the restrictor or reconnect to the pressure gauge.

4.17 Record the manometer reading for Port 1, coils 2 & 4, with the comfort control set to minimum and maximum settings.

4.18 Open the restrictor or connect to the flow meter and record the air flow of Port 1, coils 2 & 4.

4.19 Press any key, except **Q** on the Psion. The display will change to:

```
Rotor in port 2
Position.
Coils 1 & 3 on.
Press key for 2 & 4
```

4.20 Connect the pressure gauge/flow meter to Port 2.

4.21 Close the restrictor. Record the manometer reading for Port 2, coils 1 & 3, with the comfort control set to minimum and maximum settings.

4.22 Open the restrictor or connect to the flow meter and record the air flow of Port 2, coils 1 & 3.

4.23 Press any key, except **Q** on the Psion. The display will change to:

```
Rotor in port 2
   Position.
Coils 2 & 4 on.
Repeat Dyn. Test Y/N?
```

4.24 Close the restrictor. Record the manometer reading for Port 2, coils 2 & 4, with the comfort control set to minimum and maximum settings.

4.25 Open the restrictor or connect to the flow meter and record the air flow of Port 2, coils 2 & 4.

4.26 If all the tests have been completed satisfactorily, press **N**.

Check Pump Serial Number

4.27 Select **Serial** on the Psion. Cross reference the serial number displayed with the serial number on the pump case. Record numbers in the Service History.

Note : Do not activate any Alarm functions after this test procedure has been carried out as the Alarm counters have been reset to zero.

5 Static and Dynamic Mode Pressure Tests using the IR Interface

Static and Dynamic Mode Calibration Readings

Refer to Page 5, Table 29 for the calibration readings to be used in the Static and Dynamic Pressure tests that follow.

Adjusting the Pressure

Carefully prise the control knob (Chap 3, Page 28, Fig 18, Item 40) off the pump front panel. Turn the centre screw clockwise to increase the pressure or counterclockwise to decrease the pressure.

IR Interface Setup

5.1 Refer to Page 11, Section 7 for the set up and usage of the IR Interface.

5.2 Select the **Test** tab on the PC, enter the password **TEKKICHECK**, and the **Test** tab will be displayed (Refer to Figure 58).

Note: The password is not case sensitive.

Static Mode Pressure Tests

5.3 Click on **Static Test** to start the test running.

5.4 A dialog box with **Switching coils off**, followed by **Refreshing sensor status** is displayed.

5.5 Wait for the rotary valve to reach the crossover position, at which time the rotary valve is switched off. During this period, the dialog box **Waiting for crossover. This may take up to 5 minutes** is displayed.

5.6 When the crossover position is reached, the dialog box **Rotor in crossover position. Switch ON Coil 1?** is displayed.

5.7 Click **OK** on the dialog box.

5.8 Coil 1 is switched on, and the dialog box **Rotor in crossover position. Coil 1 ON. Switch ON Coil 2?** is displayed.

5.9 Record the manometer reading for coil 1, with the comfort control on the pump set to minimum and maximum settings.

5.10 Click **OK** on the dialog box.

5.11 Coil 1 is switched off, and then coil 2 is switched on. The dialog box **Rotor in crossover position. Coil 2 ON. Switch ON Coil 3?** is displayed.

5.12 Record the manometer reading for coil 2, with the comfort control set to minimum and maximum settings.

5.13 Click **OK** on the dialog box.

5.14 Coil 2 is switched off, and then coil 3 is switched on. The dialog box **Rotor in crossover position. Coil 3 ON. Switch ON Coil 4?** is displayed.

5.15 Record the manometer reading for coil 3, with the comfort control set to minimum and maximum settings.

5.16 Click **OK** on the dialog box.

5.17 Coil 3 is switched off, and then coil 4 is switched on. The dialog box **Rotor in crossover position. Coil 4 ON. Repeat Test Sequence?** is displayed.

5.18 Record the manometer reading for coil 4, with the comfort control set to minimum and maximum settings.

5.19 If all the tests have been completed satisfactorily, click **Abort Test** to end the test (or **OK** to repeat the test).

Dynamic Mode Pressure Tests

5.20 Click on **Dynamic Test** to start the test running.

5.21 A dialog box with **Switching coils off**, followed by **Refreshing sensor status** is displayed.

5.22 Wait for the rotary valve to reach the crossover position, at which time the rotary valve is switched off. During this period, the dialog box **Waiting for crossover. This may take up to 5 minutes** is displayed.

5.23 When the crossover position is reached, the dialog box **Rotor in Port 1 position. Switch ON Coil 1 and 3?** is displayed.

5.24 Click **OK** on the dialog box.

5.25 Coils 1 and 3 are switched on, and the dialog box **Rotor in Port 1 position. Switch on Coil 2 and 4?** is displayed.

5.26 Connect duty outlet port to the pressure gauge. Record the manometer reading for Port 1, Coils 1 & 3, with the comfort control set to minimum and maximum settings.

5.27 Open the restrictor or connect to the flow meter, and record the air flow of Port 1, Coils 1 & 3.

5.28 Click **OK** on the dialog box.

5.29 Coils 1 and 3 are switched off, and then coils 2 and 4 are switched on. The dialog box **Rotor in Port 1 position. Press OK for Port 2?** is displayed.

5.30 Close the restrictor or reconnect to the pressure gauge.

5.31 Record the manometer reading for Port 1, Coils 2 & 4, with the comfort control set to minimum and maximum settings.

5.32 Open the restrictor or connect to the flow meter, and record the air flow of Port 1, Coils 2 & 4.

5.33 Click **OK** on the dialog box to repeat the test procedure for Port 2.

5.34 Wait for the rotary valve to reach the crossover position, at which time the rotary valve is switched off. During this period, the dialog box **Waiting for crossover. This may take up to 5 minutes** is displayed.

5.35 When the crossover position is reached, the dialog box **Rotor in Port 2 position. Switch ON Coil 1 and 3?** is displayed.

5.36 Click **OK** on the dialog box.

5.37 Coils 1 and 3 are switched on, and the dialog box **Rotor in Port 2 position. Switch on Coil 2 and 4?** is displayed.

5.38 Connect duty outlet port to the pressure gauge. Record the manometer reading for Port 2, Coils 1 & 3, with the comfort control set to minimum and maximum settings.

5.39 Open the restrictor or connect to the flow meter, and record the air flow of Port 2, Coils 1 & 3.

5.40 Click **OK** on the dialog box.

5.41 Coils 1 and 3 are switched off, and then coils 2 and 4 are switched on. The dialog box **Rotor in Port 2 position. Press OK for Port 1?** is displayed.

5.42 Close the restrictor or reconnect to the pressure gauge.

5.43 Record the manometer reading for Port 1, Coils 2 & 4, with the comfort control set to minimum and maximum settings.

5.44 Open the restrictor or connect to the flow meter, and record the air flow of Port 1, Coils 2 & 4.

5.45 If all the tests have been completed satisfactorily, click **Abort Test** to end the test (or **OK** to repeat the complete test).

Check Pump Serial Number

5.46 Select the **Information** tab on the PC (Refer to Figure 60). You must click on **REFRESH** to read and display the data from the pump.

5.47 Cross reference the **Pump Serial Number** displayed on the **Information** tab with the serial number on the pump case. Record the numbers in the Service History.

5.48 Note : Do not activate any Alarm functions after this test procedure has been carried out as the Alarm counters have been reset to zero.

6 Psion Organiser Setup

6.1 Switch the Psion on and select which type of pump is to be tested from the Psion menu.

6.2 If at any time the Psion indicates the following message, then press the **STATIC** and **MUTE** buttons together on the pump.

```
ERROR
TIMED OUT
================
press SPACE key
```

7 IR Interface Setup and Passwords for ProNimbus

7.1 Refer to the IR Interface User Manual, 151910, and carry out the following:

7.1.1 Install and set up the IR Interface.

7.1.2 Run the IRRemote software on the PC.

7.2 The **Connection** menu is displayed on the PC by default (Refer to Figure 59). Select the type of pump to be tested from the menu.

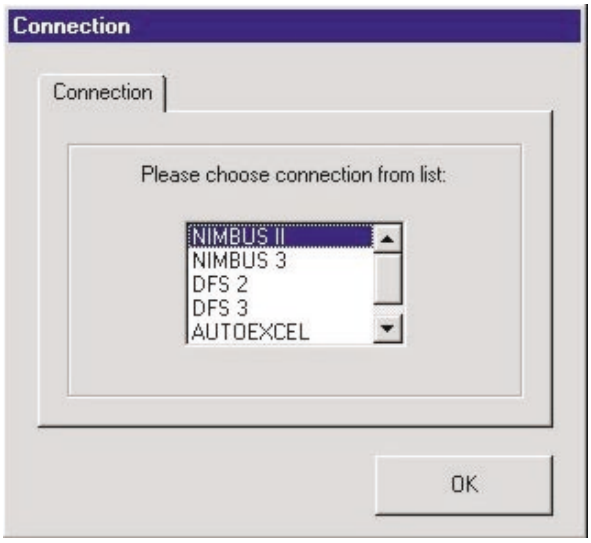


Figure 59 - Connection Menu on the PC connected to the IR Interface

7.3 When prompted by the PC, press the **STATIC** and **MUTE** buttons together on the pump, and click **OK**.

7.4 The **Information** tab is now displayed (Refer to Figure 60). You must click on **REFRESH** to read and display the data from the pump.

7.5 Infrared data transmission progress is indicated by the message **Communication successful** or **Communication unsuccessful** displayed in the lower left-hand corner of the dialog box.

*Note: If the infrared data transmission status indicates **Communication unsuccessful** and/or a **?** is displayed in all the boxes on the **Information** tab (except a **V** in the **Software Version Number** box), then an error has occurred. Check the **Installation and Setup** section in the **IR Interface User Manual**, and then click on **REFRESH** again.*

7.6 If at any time during the testing, the infrared data transmission status indicates **Communication unsuccessful** , then press the **STATIC** and **MUTE** buttons together on the pump.

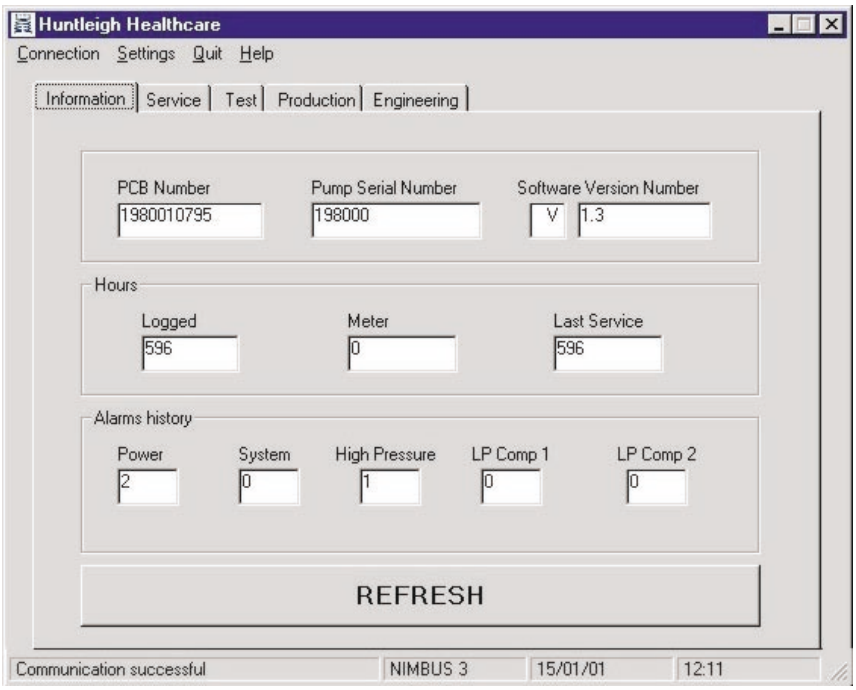


Figure 60 - Information Tab on the PC connected to the IR Interface

7.7 IR Interface Passwords:

- The **Information** tab is not password protected.
- The other four tabs (**Service**, **Test**, **Production** and **Engineering**) are password protected. Each of these tabs has a separate unique password.
- When any of the four password protected tabs is selected, an **Enter Password** dialog box is displayed. Type in the password, and click **OK**.
  If the password is correct, the particular tab will be displayed.
  If the password is incorrect, access to the tab will be denied, and an **Invalid Password** dialog box will be displayed. Click **OK** and select the tab again to re-enter the password.
- The password for the **Service** tab is **SERVICE**.
- The password for the **Test** tab is **TEKKICHECK**.
- Passwords are not case sensitive.

*Note: The **Production** and **Engineering** tabs are for internal Huntleigh Healthcare use only. Should it be necessary to access either of these two tabs, please contact Huntleigh Healthcare who will supply the relevant passwords to access the tabs.*

8 Electrical Testing

To test and calibrate the pump unit correctly, the following equipment is required:

Table 30 - Electrical Test Equipment

Equipment
Insulation resistance tester (Megger) 500 Vdc
Portable appliance tester
Multimeter/Continuity tester
Dielectric strength tester (Flash tester) 3.0 kVac with current limit

Electrical Safety Checks - Class I

There are several electrical safety checks that must be carried out after breakdown repairs and servicing. Where alternatives are given, the test will depend upon the available equipment. The tests are as follows:

- Earth Continuity Tests
- Insulation Resistance Test (Megger Test) or
- Dielectric Strength (Flash Test)

Earth Continuity Tests

This test is for checking the earth continuity and the earth connection to the metal parts of the appliance, which may become live because of insulation breakdown (i.e. Those parts which should be earthed).

A voltage is established between the earth pin of the appliance's mains/power supply plug and the metal parts.

Specification: A (nominal) 25 A current is passed for 10 seconds between the earth pin of the power plug, and each of the insulated metal parts designated for the product. The impedance should NOT exceed 0.2Ω

This above test can be conducted with a Portable Appliance Tester.

Alternatively, a Multimeter/Continuity Tester can be utilised, but the impedance is tested using a much lower current.

Insulation Resistance Tests

This test checks the integrity of the appliance's insulation.

For all appliances, this test is applied between the Live and Neutral wires (connected together), and earth. In addition, this test is also applied to the Live and Neutral wires (connected together), and the appliance's enclosure.

Specification: 500 Vdc is applied to the insulation and the measured resistance must be greater than 2 MΩ

This test can be conducted using a Portable Appliance Tester.

Dielectric Strength Test (Flash Test)

This test shows the response of the insulation to high ac-voltage stress, indicates the effects of capacitive current, and gives an early warning of insulation problems which may develop in the appliance.

Leakage Circuit Test (USA)

Measure the risk currents in accordance with the ANSI-AAMI ESI-1993 Standard (American National Standard Safe Current Limits for Electromedical Apparatus) or as specified in UL 2601-1).

WARNING:

DANGER OF ELECTRIC SHOCK. DO NOT TOUCH ANY EXPOSED PARTS WHILE CONDUCTING THIS TEST. DO NOT TOUCH ANY PART OF YOUR BODY WITH THE CONTACTS OF THE PROBES.

THIS EQUIPMENT SHOULD NOT BE USED IF YOU HAVE A HEARING AID OR PACEMAKER FITTED, DUE TO THE POSSIBILITY OF ELECTROMAGNETIC DISTURBANCE.

Specification: 1) 1.5 kVac is applied between the live and neutral wires (connected together), and the appliance's earthed parts. No breakdown should occur.

2) 3 kVac is applied between the live and neutral wires (connected together) and the appliance's non-earthed enclosure. No breakdown should occur.

Note : The voltage levels used for this test, may stress and weaken the insulation. This test, is therefore not recommended as a routine test. It should be only used after a major assembly/disassembly has been completed.

9 Mattress Pressure and Function Test

This procedure must be carried out after a service or major repair of a mattress. To test/calibrate the mattress correctly, the following equipment is required:

Table 31 - Mattress Pressure and Function Test Equipment

Equipment
Pressure/Flow meter
Portable inflation test unit
Stop watch

Test Procedure

9.1 Connect a portable inflation unit to the mattress.

9.2 Fully inflate the mattress and connect it to a pressure/flow meter and test to the following requirements:

- Inflation test pressure 80 to 90 mmHg
- Inflation stabilisation period 30 seconds
- Inflation test period 3 minutes
- Leak rate must not exceed 3 mmHg

Note : If the mattress fails the tests, investigate as to the reason why, repair any faults and re-test in accordance with the test specification.

CHAPTER 7

TECHNICAL SPECIFICATION

Pump

Size:	Length	508mm (20")
	Height	220mm (8.7")
	Depth	100mm (4")
Weight:	5.7kg (12.5lb)	
Case material:	ABS or ABS/polycarbonate blend	
Supply Voltage:	240 Vac, 50 Hz (UK) 220 Vac, 50 Hz (Europe) 110 Vac, 50 Hz (USA) 100 Vac, 50 Hz (Japan) 100 Vac, 60 Hz (Japan)	
Electrical Rating:	30VA	
Fuse rating:	F500mA	
Air inlet filter:	Service replaceable	
Operating cycle:	10 minutes	

Test Standards

All pumps are tested to:

Europe	En 60601-1
USA	UL 2601-1 (Classified by Underwriters Laboratories Inc.®) with respect to electric shock, fire and mechanical hazards only in accordance with UL 2601-1.
Canada	CSA C22.2 No. 601-1 (Classified by Underwriters Laboratories Inc.®) with respect to electric shock, fire and mechanical and other hazards only in accordance with CAN/CSA C22.2 No. 601.1.

Degree of protection against electric shock:	Class I, type BF
Degree of protection of ingress of liquids:	Ordinary (not protected)
Mode of operation:	Continuous

Symbols

alternating current

O **(Off)** power disconnection from the mains/power supply.

I **(On)** power connection to the mains/power supply.

Type BF

Environmental Conditions

Operating

Temperature range:	+10°C to +40°C
Relative Humidity:	30% to 75%
Atmospheric pressure:	700 hPa to 1060 hPa

Storage

Storage temperature	-40°C to +70°C
Relative Humidity	10% to 100% (non-condensing)
Atmospheric pressure	500 hPa to 1060 hPa
Environmental Protection	Please dispose of this unit in accordance with local regulations

Tube Set

Length:	1 metre (39.4")
Material	
Tube:	5-way moulded PVC
Connectors:	Moulded nylon

Mattress

Size:	Length	2085mm (82")
	Height (at edges)	215 mm (8.5")
	Width (Standard)	890 mm (35")
	(Narrow)	800 mm (31.5")
Weight:	Standard	11.5kg (25lb 5oz)
	Narrow	10.3kg (22lb 11oz)
Cover material:		Polyurethane coated knitted fabric
Base material:		Polyurethane coated woven fabric
Cell material:		0.3mm (0.012") Polyurethane flexible sheeting

CHAPTER 8
PARTS LIST

1 Pump Assembly Parts List

Part Number	Description	Fig-Item	Qty
151001	Nimbus 2 Pump Assembly (UK)	-	1
151002	Nimbus 2 Pump Assembly (German)	-	1
151003	DFS 2 Pump Assembly (USA)	-	1
151004	Nimbus 2 Pump Assembly (Euro)	-	1
151005	Nimbus 2 Pump Assembly (French)	-	1
151006	Nimbus 2 Pump Assembly (Japan 60Hz)	-	1
151007	Nimbus 2 Pump Assembly (Italian)	-	1
151008	Nimbus 2 Pump Assembly (Japan 50Hz)	-	1
151010	Nimbus 3 Pump Assembly (UK)	-	1
151012	Nimbus 3 Pump Assembly (German)	-	1
151013	DFS 3 Pump Assembly (USA)	-	1
151014	Nimbus 3 Pump Assembly (Euro)	-	1
151015	Nimbus 3 Pump Assembly (French)	-	1
151016	Nimbus 3 Pump Assembly (Japan 60Hz)	-	1
151017	Nimbus 3 Pump Assembly (Italian)	-	1
151020	Nimbus 3 Pump Assembly (Holland)	-	1
151021	Nimbus 3 Pump Assembly (Japan 50Hz)	-	1
Front and Rear Cases			
151052	Rear Case Assembly	4-10	1
151308	• Rear Case	5-10	1
151311	• Filter Housing Plate	5-20	2
151312	• Filter Felt	5-30	1
FAS179	• Screw, 2.5mm (dia) x 10mm Pan Head	5-40	6
500381	• Rubber Foot	4-50	6
151307	Front Case	4-20	1
500381	• Rubber Foot	4-50	2
151105	Neoprene Sponge Cord, Length 1.34m, Dia 2mm	4-40	1.34 m

Part Number	Description	Fig-Item	Qty
FAS 188	Screw, M4 x 30mm Pan Head	4-30	8
151123	Hanging Bracket	3-10	1
151427	• Bracket	3-20	1
151428	• Wire	3-30	1
FAS046	• Screw	3-40	2
FAS216	• Nut	3-50	2
Label Sets			
151382	Nimbus 2 (UK, Euro)	-	1
151397	Nimbus 2 (German)	-	1
151394	Nimbus 2 (French)	-	1
151416	Nimbus 2 (Italian)	-	1
151419	Nimbus 2 (Japan 50Hz)	-	1
151410	Nimbus 2 (Japan 60Hz)	-	1
151374	DFS 2 (USA)	-	1
151443	Nimbus 3 (UK)	-	1
151459	Nimbus 3 (German)	-	1
151452	Nimbus 3 (French)	-	1
151463	Nimbus 3 (Italian)	-	1
151461	Nimbus 3 (Holland)	-	1
151470	Nimbus 3 (Euro)	-	1
151467	Nimbus 3 (Japan 50Hz)	-	1
151466	Nimbus 3 (Japan 60Hz)	-	1
151468	DFS 3 (USA)	-	1
Double Compressor Assembly			
165076	Double Compressor Assembly - 220V (UK, EURO)	6-10	1
165074	Double Compressor Assembly - 120V (USA)	6-10	1
165077	Double Compressor Assembly - 100V (Japan 60Hz)	6-10	1
165078	Double Compressor Assembly - 100V (Japan 50Hz)	6-10	1
165311	• Compressor Lid Casting	6-20	2
165312	• Compressor Lid Gasket	6-30	2

Part Number	Description	Fig-Item	Qty
165054	• Shuttle Assembly - 63 Shore (UK, EURO, Japan 50Hz)	8-10	2
165092	• Shuttle Assembly - 70 Shore (USA, Japan 60Hz)	8-10	2
165058	• Coil (pair) 240V (UK, EURO)	8-70	2
165107	• Coil (pair) 100V (USA)	8-70	2
165085	• Coil (pair) (Japan 50 & 60Hz)	8-70	2
165314	• Compressor Filter Lid	7-70	8
165313	• Compressor Filter	7-80	8
165310	• Bump Stop	7-30	4
165324	• Bump Stop Plate	7-40	2
165300	• Grommet - Lead Through	6-40	4
165303	• Grommet - Lead Through	6-45 8-80	4
165306	• Outlet Tube	8-20	8
FAS051	• Screw, M4 x 6mm Pan Head	7-10	4
FAS172	• Screw, M4 x 10mm Pan Head	7-50	8
FAS176	• Screw, M4 x 12mm Pan Head	7-30	8
FAS177	• Screw, M4 x 8mm Csk Head	6-50 7-50	12
FAS193	• Screw, M3 x 5mm Pan Head	7-60	8
FAS160	• Washer, M4 Plain	7-20	4
FAS206	• Washer, Belleville Serated Safety	8-60	8
FAS207	• Washer, Disk Spring (ID 4.2mm, OD 10mm)	8-40	8
151364	AV Mount	6-170	4
151310	Compressor Mounting Bracket	6-130	2
151386	P-Clip, No. 6	6-110	3
FAS093	Screw, M4 x 12mm Pan Head	6-80	2
FAS095	Screw, M4 x 10mm Pan Head	6-120	4
FAS144	Nut, M4 Full	6-60	2
FAS178	Nut, 8/32 UNC	6-140	8
FAS053	Washer, M4 Anti-Vibration	6-70 6-90 6-160	6
FAS160	Washer, M4 Plain	6-100 6-150	8

Part Number	Description	Fig-Item	Qty
BP196	Cable Tie	6-180	A/R
Rotary Valve Assembly, Pressure Control Assembly and High Pressure Switch			
151056	Rotary Valve Assembly (Nimbus 2 - UK, Euro)	10-10	1
151128	Rotary Valve Assembly (Nimbus 3 - UK, Euro)	10-10	1
151155	Rotary Valve Assembly (Nimbus 3 - Japan 60Hz & DFS 3)	10-10	1
151156	Rotary Valve Assembly (Nimbus 3 - Japan 50Hz))	10-10	1
151110	Rotary Valve Assembly (Nimbus 2 - Japan 60Hz & DFS 2)	10-10	1
151113	Rotary Valve Assembly (Nimbus 2 - Japan 50Hz)	10-10	1
151059	Pressure Control Assembly	18-10	1
151305	Pressure Control Knob	18-40	1
151327	Pressure Control Label	18-50	1
198394	High Pressure Switch	19-10	1
151348	Pillar, M3 x 30mm	10-40	2
FAS043	Screw, M3 x 6mm Pan Head	10-20 18-20	6
FAS182	Screw, 3 (dia) x 20mm Pan Head	19-20	2
FAS002	Washer, 6BA Anti-Vibration	10-30 18-30	6
BP196	Cable Tie	10-50	A/R
Display Panel PCB and Front Panel			
151478	Display Panel PCB Assembly (New Style) 240V (UK, EURO)	16-10	1
151477	Display Panel PCB Assembly 120V (USA, Japan 50 & 60Hz)	16-10	1
151457	• Battery, Rechargeable	28-10	1
151493	Front Panel Assembly (Nimbus 2) - (UK, Euro, Japan 50 & 60Hz)	17-10	1
151494	Front Panel Assembly (Nimbus 2) - (German)	17-10	1
151496	Front Panel Assembly (Nimbus 2) - (French)	17-10	1
151503	Front Panel Assembly (Nimbus 2) - (Italian)	17-10	1
151498	Front Panel Assembly (Nimbus 3) - (UK, Euro, Japan 50 & 60Hz)	17-10	1
151499	Front Panel Assembly (Nimbus 3) - (German)	17-10	1

Part Number	Description	Fig-Item	Qty
151500	Front Panel Assembly (Nimbus 3) - (French)	17-10	1
151501	Front Panel Assembly (Nimbus 3) - (Italian)	17-10	1
151502	Front Panel Assembly (Nimbus 3) - (Holland)	17-10	1
151495	Front Panel Assembly (DFS 2) - (USA)	17-10	1
151497	Front Panel Assembly (DFS 3) - (USA)	17-10	1
FAS098	Nut, M3 Full	16-20	8
FAS002	Washer, 6BA Anti-Vibration	16-40	1
FAS091	Washer, M3 Nylon	16-30	7
FAS145	Screw, 3 (dia) x 8mm Pan Head	17-20	13
151309	Spacer	17-30	13
151352	Spacer, 8.5 (long) x 3.2 x 6mm	16-50	8
Mains/Power Items			
151353	Mains/Power Switch, 240V	20-10 24-50	1
151121	Mains/Power Filter Assembly	24-60	1
151119	Fuseholder Assembly - Live (Brown) - (Hard wired pumps)	22-20 24-80	1
151070	Fuseholder Assembly - Live (Brown) - (Pumps with mains/power inlet socket)	22-20	1
CAS011	• Fuse, 20 x 5mm, 500mA	22-30	1
151118	Fuseholder Assembly - Neutral (Blue) - (Hard wired pumps)	22-10 24-20	1
151069	Fuseholder Assembly - Neutral (Blue) - (Pumps with mains/power inlet socket)	22-10	1
CAS011	• Fuse, 20 x 5mm, 500mA	22-30	1
151406	5-Way Connector and Support (Hard wired pumps)	23-10 24-40 25-30	1
198312	Cable Converter (Hard wired)	25-10	1
198311	Grommet - (Hard wired pumps)	25-20	1
198328	Mains/Power Cable (UK) - (Hard wired pumps)	23-20	1
504324	Mains/Power Cable (Euro) - (Hard wired pumps)	23-20	1
BP300	Mains/Power Cable (USA) - (Hard wired pumps)	23-20	1
CAS021	Mains/Power Cable (Japan) - (Hard wired pumps)	23-20	1

Part Number	Description	Fig-Item	Qty
252317	Pillar, M3 x 11mm - (Hard wired pumps)	25-50	2
FAS145	Screw, 3 (dia) x 8mm Pan Head - (Hard wired pumps)	24-70	1
FAS194	Screw, M3 x 12mm Csk Head - (Hard wired pumps)	25-40	2
FAS144	Nut, M4 Full - (Hard wired pumps)	24-10	2
FAS053	Washer, M4 Anti-Vibration - (Hard wired pumps)	24-30	2
BP196	Cable Tie - (Hard wired pumps)	24	A/R
5-way Manifold			
151480	5-way Barbed Manifold	9-10	1
151304	5-way Manifold Gasket	9-20	1
151476	Manifold Connector - Braced Grey (Nimbus 2 and DFS 2)	9-30A	1
151471	Manifold Connector - Braced Blue (Nimbus 3 and DFS 3)	9-30A	1
FAS041	Screw, M3 x 20mm Csk Head	9-50	2
FAS196	Screw, M3 x 25mm Csk Head	9-55	2
FAS233	Screw, M3 x 16mm Csk Head	9-40	4
FAS098	Nut, M3 Full	9-60	4
VIB004	Grommet	9-70	4
197312	Nut, M3 Dome Plastic	9-80	4
Silencer Bag, Bio Filter and Tubes			
151098	Silencer Bag Assembly	26-10	1
151450	Bio Filter (Nimbus 3 and DFS 3 only)	27-10	1
151444	Bio Filter Label (Nimbus 3 and DFS 3 only)	27-20	1
151090	Tube (Manifold - Pressure Control Assy)	26-20	1
151091	Tube (Compressor - High Pressure Switch)	26-70	1
151129	T-Tube (Manifold/Rotary Valve Assy/Pressure Control Assy)	26-40	1
151130	T-Tube (Manifold/Rotary Valve Assy/Pressure Control Assy)	26-30	1
151131	T-Tube (Manifold/Rotary Valve Assy/Silencer Bag Assy)	26-50	1
151132	Tube (Silencer Bag Assy - Bio Filter)	26-60	1
SW393	Silicone Tube, Blue, ID 6mm OD 10mm	27-30	A/R
BP196	Cable Tie	-	A/R

Part Number	Description	Fig-Item	Qty
Tools			
MIS155	Spacer saddle gauge set (5 gauges A to E)	8-90	1

2 Mattress Assembly Parts List

Part Number	Description	Fig-Item	Qty
152001	Mattress Assembly Standard - Nimbus 2	REF	1
152002	Mattress Assembly Standard - Nimbus 2 German	REF	1
152003	Mattress Assembly Standard - DFS 2	REF	1
152010	Mattress Assembly Standard - Nimbus 3	REF	1
152012	Mattress Assembly Standard - Nimbus 3 German	REF	1
152013	Mattress Assembly Standard - DFS 3	REF	1
237001	Mattress Assembly Narrow - Nimbus 2	REF	1
237003	Mattress Assembly Narrow - DFS 2	REF	1
237010	Mattress Assembly Narrow - Nimbus 3	REF	1
237013	Mattress Assembly Narrow - DFS 3	REF	1
152205	• Top Cover Standard - Nimbus 2	-	1
152203	• Top Cover Standard - DFS 2	-	1
152178	• Top Cover Standard - Nimbus 3	-	1
152199	• Top Cover Standard - DFS 3	-	1
237201	• Top Cover Narrow - Nimbus 2	-	1
237090	• Top Cover Narrow - DFS 2	-	1
237095	• Top Cover Narrow - Nimbus 3	-	1
237102	• Top Cover Narrow - DFS 3	-	1
152204	• Base Cover Standard - Nimbus 2/DFS 2	-	1
237200	• Base Cover Narrow - Nimbus 2	-	1
237085	• Base Cover Narrow - DFS 2	-	1
152191	• Base Cover Standard - Nimbus 3/DFS 3	-	1
237094	• Base Cover Narrow - Nimbus 3/DFS 3	-	1
152052	• Manifold Assembly	-	1
197096	• Partial Non-Return Valve Assy	-	1
152059	• Foot Cell - Standard	-	3

Part Number	Description	Fig-Item	Qty
237059	• Foot Cell - Narrow	-	3
152057	• Standard Cell - Standard	-	9
237057	• Standard Cell - Narrow	-	9
152140	• AST Cell - Standard	-	8
237140	• AST Cell - Narrow	-	8
152073	• Heel Protector	-	1
152318	• Blank Connector (CPR Unit)	-	1
152301	• Clip	-	1
NMB441	• Soft Foam Sheet	-	1
152113	• Hard Foam Sheet	-	1
152114	• Sensor Pad (Auto-Matt)	-	1
152383	• Small Hard Foam Sheet	-	1
152173	• Loop Sheet Standard - Nimbus 3/DFS 3	-	1
237097	• Loop Sheet Narrow - Nimbus 3/DFS 3	-	1
152067	• Loop Sheet Standard - Nimbus 2/DFS 2	-	1
237067	• Loop Sheet Narrow - Nimbus 2/DFS 2	-	1
152404	• Elastic Loop (Nimbus 3/DFS 3 Only)	-	15
152403	• Support Strap Standard - Nimbus 3/DFS 3	-	5
237305	• Support Strap Narrow - Nimbus 3/DFS 3	-	5
151075	• Tubeset - Nimbus 2/DFS 2	-	1
151125	• Tubeset, Long - Nimbus 2/DFS 2 (2.5 metres)	-	1
151134	• Tubeset - Nimbus 3/DFS 3	-	1
151302	• Tubeset Release Button - Nimbus 2/DFS 2	-	2
151445	• Tubeset Release Button - Nimbus 3/DFS 3	-	2
151342	• Tubeset Spring	-	4
152409	• Kit Bag - Nimbus 3	-	1
152355	• Kit Bag - Nimbus 2	-	1
NMB551	• Kit Bag - DFS 2/DFS3	-	1

Part Number	Description	Fig-Item	Qty
CPR Assembly			
152077	CPR Module Assembly (Nimbus 2/DFS 2, except Germany)	REF	1
152152	CPR Module Assembly (Nimbus 2 German Only)	REF	1
152192	CPR Module Assembly (Nimbus 3/DFS 3, except Germany)	REF	1
152202	CPR Module Assembly (Nimbus 3 German Only)	REF	1
FAS180	• Screw 3mm DIA x 12mm Pozi	43-10	6
152329	• Backplate	43-20	1
152319	• Connector	43-30	1
152332	• Connector	43-40	1
152341	• O-Ring Seal	43-50	1
152079	• Hose 44mm ±2mm	43-60	1
152136	• Hose 100mm ±2mm	43-70	1
152334	• Hose CPR Air Inlet Long	43-80	1
152356	• Hose CPR Air Inlet Short	43-90	1
152136	• Hose 100mm ±2mm	43-100	2
152399	• Transport Assembly	43-110	1
FAS145	• Screw 3mm DIA x 8 Pozi Pan Head PT	43-120	2
152308	• Transport Knob Label	43-130	1
FAS189	• Screw M3 x 6mm C’SK Head Pozi	43-140	1
152322	• Transport Knob	43-150	1
FAS192	• Pin 3 x 24 LG MDP	43-160	1
152330	• Shaft CPR Handle	43-170	1
FAS192	• Pin 3 x 24 LG MDP	43-180	1
152331	• Handle CPR Pull	43-190	1
152321	• Cap CPR Body	43-200	1
152320	• Spring CPR	43-210	1
FAS041	• Screw M3 x 20mm C’SK Pozi	44-220	1
151471	• Connector Manifold Braced Blue (Nimbus 3/DFS 3)	44-230	1
151476	• Connector Manifold Braced Grey (Nimbus 2/DFS 2)	44-230	1
151304	• Gasket 5 Way Manifold	44-240	1
151480	• Manifold 5 Way Barbed	44-250	1

Part Number	Description	Fig-Item	Qty
BP024	• Brass Threaded Insert	44-260	4
Alternating Head Cells Modification Kit			
152208	Alternating Head Cells Modification Kit	-	1
152418	• 'T' Pieces (polypropylene)	-	3
152419	• Elbow Pieces (polypropylene)	-	2
152420	• Blanking Plugs (acetyl)	-	3
152209	• Lengths of PVC Clear Tubing	-	3
152901	• User Guidance Notes	-	1

CHAPTER 9

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